

REGIONAL QUARTERS RENTAL SURVEY

COVERING

GOVERNMENT-FURNISHED QUARTERS

LOCATED IN

ARIZONA/NEVADA SURVEY REGION

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I. SURVEY BACKGROUND

The Quarters Management and Information Systems (QMIS) Office coordinated a contractor-conducted field survey of the private rental housing market in the states of Arizona, California, Idaho, Nevada, Oregon, and Utah from November 1999 through January 2000. This survey was undertaken as specified in the Office of Management and Budget (OMB) Circular No. A-45, and the U.S. Department of the Interior's Departmental Quarters Handbook. OMB Circular A-45 provides for reconfirmation of the market based rental rates at least once every five years, or sooner, if conditions warrant.

The collection and analysis of rental housing data were accomplished employing methods similar to those used in previous surveys. Automated and manual analytical procedures were used to establish base rental rates for houses (including plexes), apartments, mobile homes and trailer spaces. Rental rates for cabins were established based upon their comparability with 1-bedroom houses. Rental rates for temporary housing and travel trailers were established based upon their comparability with mobile homes. Rental rates for dormitories, bunkhouses and transient quarters were established by extending the principle of comparability, as provided for in OMB Circular A-45.

The objective of regional surveys, as set forth in OMB Circular No. A-45, is to develop reasonable rental rates based upon the "... typical rental rates for comparable private housing in the general area in which the Government quarters are located" The policy set forth in OMB Circular A-45 is as follows:

Rental rates and charges for Government quarters and related facilities will be based upon their "reasonable value...to the employee...in the circumstances under which the quarters and facilities are provided, occupied, or made available." ...reasonable value to the employee or other occupant is determined by the rule of equivalence; namely, that charges for rent and related facilities should be set at levels equal to those prevailing for comparable private housing located in the same area, when practicable...

The regional survey method uses regression analysis techniques to establish a base rental rate for a given type of quarters that reflects the typical rate for that type of housing in the survey area. Regression analysis allows the QMIS Program Office to establish adjustments that reflect: (1) the contributory value (+ or -) of housing features that the private rental market indicates are significant; and (2) relevant social and economic factors that are manifested in the rent levels of individual communities.

Because regression analysis permits assessment of (and adjustment for) different locations, as measured by market rents, several localities or states can be surveyed at a time to minimize data collection costs and the rates can be individualized for communities significantly at variance with the regional rent pattern.

The resulting product (finalized rental rates), when derived from carefully applied automated statistical analysis, provides a logical and equitable base rental rate structure supported by the market rental rate pattern of the region and the community.

II. INVENTORY OF GOVERNMENT-FURNISHED QUARTERS

This survey was initiated with an inventory of Government-furnished quarters (GFQ) managed by the agencies and bureaus that participate in the QMIS program.

Most agencies and bureaus are now using the QMIS database software to manage their inventories. This software was developed by the QMIS Program Office in Denver. The database software allows an installation or region to maintain its own housing inventory. Rents can be calculated in just minutes, even for hundreds of quarters. This decentralized system provides local control of the housing inventory. As always, the key to accurate rents is accurate, up-to-date inventory information. Software with the new housing rental rate formulas and new utility rates is distributed from Denver whenever new regional surveys are conducted or at CPI time. If you do not receive new CPI software by approximately January 1st of each year, please contact the QMIS Program Office (303-969-7240). It is important that all agencies and bureaus submit (on diskettes or via electronic mail) updates to their housing inventories at least once a year. This information is used to determine the communities and characteristics to be sampled in new Regional Surveys. The information is also used for various general management reports.

III. CONTRACTING FOR THE PRIVATE RENTAL SURVEY

A. DETERMINATION OF THE COMMUNITIES TO BE SURVEYED

Selection of the communities to be surveyed was initiated with a review of the nearest established communities identified in the quarters inventory process. Their geographic locations and populations were determined to enable selection of established communities nearest to concentrations of Government housing.

Inclusion of these communities enables a comparison of the community rental rate structure with that of the survey region. This permits a ready determination of whether the local or the regional rental rate structure should be utilized to establish the GFQ base rents. A complete discussion of this process is contained in section IV of this report.

The communities surveyed represented broad geographic and population ranges. The largest community surveyed, Tucson, Arizona had a 1990 population of 405,390. The smallest community, Gila Bend, Arizona, had a population of 1,747. A list of the surveyed communities appears as Table 1. In accordance with OMB Circular A-45, communities with 1990 census populations below 1,500 were not analyzed.

TABLE 1 COMMUNITIES SURVEYED

<u>STATE AND COMMUNITY</u>	<u>1990 CENSUS POPULATION</u>
ARIZONA	
Ajo, AZ	2,919
Bullhead City, AZ	21,951
Camp Verde, AZ	6,243
Casa Grande, AZ	19,082
Chandler, AZ	90,533
Chino Valley, AZ	4,837
Coolidge, AZ	6,927
Cottonwood, AZ	5,918
Douglas, AZ	12,822
Flagstaff, AZ	45,857
Gila Bend, AZ	1,747
Globe, AZ	6,062
Green Valley, AZ	13,231
Holbrook, AZ	4,686
Kingman, AZ	12,722
Mesa, AZ	285,091
Nogales, AZ	19,489
Parker, AZ	2,897
Payson, AZ	8,377
Pine Top, AZ	2,422
Prescott Valley, AZ	8,858
Safford, AZ	7,359
Show Low, AZ	5,019
Sierra Vista, AZ	32,983
Springerville, AZ	1,802
Tuscon, AZ	405,390
Willcox, AZ	3,122
Williams, AZ	2,573
Winslow, AZ	8,190
Yuma, AZ	54,923

TABLE 1 COMMUNITIES SURVEYED (Continued)

<u>STATE AND COMMUNITY</u>	<u>1990 CENSUS POPULATION</u>
CALIFORNIA	
Alturas, CA	3,231
Boron, CA	2,101
Bishop, CA	3,475
Blythe, CA	8,428
Calipatria, CA	2,690
Indio, CA	36,793
Lone Pine, CA	1,818
Mammoth Lakes, CA	4,785
Needles, CA	5,191
Spring Valley, CA	55,331
Twenty-nine Palms, CA	11,821
Trona, CA (Searles Valley CDP)	2,740
Yucca Valley, CA	13,701
IDAHO	
Twin Falls, ID	27,591
NEVADA	
Battle Mountain, NV	3,542
Boulder City, NV	12,567
Elko, NV	14,736
Ely, NV	4,756
Fallon, NV	6,438
Gardnerville, NV	2,177
Henderson, NV	64,942
Pahrump, NV (CDP)	7,424
Tonopah, NV	3,616
Winnemucca, NV	6,134

TABLE 1 COMMUNITIES SURVEYED (Continued)

<u>STATE AND COMMUNITY</u>	<u>1990 CENSUS POPULATION</u>
OREGON	
Klamath Falls, OR	17,737
Lakeview, OR	2,526
UTAH	
Cedar City, UT	13,443
Kanab, UT	3,289

B. DETERMINATION OF THE HOUSING CLASSES TO BE SURVEYED

In order to determine which housing classes to survey, the inventory data for the agencies participating in the QMIS system were separated into housing classes shown in Table 2, below. Analysis of the data revealed the following numbers of units per housing class:

TABLE 2 GOVERNMENT-FURNISHED QUARTERS - (BY HOUSING CLASS)

Housing Class	# of Units	Avg. Age	Age Range	Avg. SQFT	SQFT Range
Houses					
4+ Bedrooms	18	45	(32 - 107)	1,758	(984 - 3,229)
3 Bedrooms	512	31	(10 - 99)	1,313	(900 - 2,619)
2 Bedrooms	419	44	(10 -132)	1,018	(105 - 2,290)
1 Bedroom	144	46	(14 -96)	675	(240 - 1,426)
Apartments					
3+ Bedrooms	2	28	(17 - 92)	1,312	(935 - 1,650)
2 Bedrooms	12	31	(17 - 61)	944	(661 - 1,358)
1 Bedroom	63	40	(15 -72)	635	(321 - 1,175)
Efficiency	25	38	(23 - 68)	408	(150 - 990)
Cabins	73	56	(10 - 142)	402	(120 - 1,360)
Boat	1				
Mobile Homes					
4+ Bedrooms	5	22	(8 -38)	1,256	(661 - 1632)
3 Bedrooms	124	27	(17 - 35)	1,050	(750 - 1,300)
2 Bedrooms	102	27	(17 - 35)	865	(600 - 1,100)
1 Bedroom	7	24	(11 - 37)	493	(256 - 863)
Travel Trailers	28				
Dormitories	114	39	(8 - 82)	706	(90 - 4,192)
Trailer Pads	273				
TOTAL UNITS	1,922				

As with other regional surveys, the contractor was directed to survey only those housing classes for which a representative sample could be readily obtained in the private rental market. Thus, comparables were not obtained for cabins or lookouts, temporary housing, travel trailers, bunkhouses/dormitories, transient quarters or tents.

Rental rates for cabins were established by using the average rental rate for one-bedroom, single-family houses as the basis of comparison. Additional adjustments, that reflect the absence of certain standard housing features in some cabins, have been included for use when appropriate.

Since temporary housing and travel trailers (mobile home-like structures containing less than 256 square feet of gross living area) are most structurally similar to mobile homes, the rental charges for these housing classes are based upon the analysis of mobile home market rental comparables.

Since comparable bunkhouse or dormitory housing does not exist in most communities, the QMIS Program Office is unable to obtain sufficient market data to provide a satisfactory statistical base. Consequently, rental rates for bunkhouses and dormitories have been established using an extension of the Principle of Comparability, as permitted in OMB Circular A-45. Similarly, the rental charge for transient quarters has been established in conjunction with the dormitory rate structure.

OMB Circular A-45, revised October 20, 1993, excludes tents from the definition of Government-furnished quarters. Therefore, rental charges have not been established (and should not be assessed) for tents which are used as employee housing.

Four housing classes (houses/plexes, apartments, mobile homes and trailer spaces) were ultimately selected for field survey and computer analysis. The contractor was instructed to select comparables, built to Housing and Urban Development (HUD) minimum housing standards, wherever possible. The number of observations obtained for each housing class in each community surveyed varied depending upon the number of nearby Government quarters of that class. The inventory data for each of the housing classes was analyzed to determine frequencies and age and size ranges for major construction elements. The information in Table 2 was used to guide the contractor in the conduct of the survey.

C. HEATING FUELS AND UTILITY CHARGE SURVEY

To ensure reliability of the energy consumption estimates for housing where consumption is neither metered nor measured, this report uses a series of contractor-developed heating and cooling consumption tables for each general type of housing represented in the survey. The tables are based upon energy consumption studies that use a methodology meeting housing industry standards. The results reflect energy consumption for variously sized single-family houses (with and without basements), apartments, and mobile homes. A complete discussion of the energy consumption/cost methodology is contained in Section VI.

D. CONTRACTOR SELECTION

The National Business Center, Products & Services provided procurement support and project coordination for this Private Rental Survey. Reimbursement for survey expenses was underwritten by the agencies and bureaus that participate in the Quarters Management Program.

The private rental survey was completed by SCS, Inc., of Talala, Oklahoma, during the months of November 1999 through January 2000. A total of 816 private rental housing comparables were sampled. In addition, electrical, heating fuel, utility, appliance, and other related service charges were collected in each of the communities surveyed. The private rental housing costs that were obtained reflected current rental costs and required no adjustment for time.

IV. REGIONAL SURVEY PRINCIPLES AND PROCEDURES

A. SURVEY PRINCIPLES

The purpose of a regional survey is to determine and establish reasonable quarters rents, through an analysis of the market rents of comparable private housing in established communities nearest to concentrations of Government housing. The process of arriving at the base rent of a structure is influenced by real estate appraisal principles, statistical limitations, and administrative considerations. Often there may be a conflict among these three interests which necessitates a trade-off.

1. Real estate appraisal principles include matching comparables as closely as possible to the specific subject properties in physical characteristics and location, and adjusting in a logical direction for all significant differences.
2. Statistical principles involve: (a) trying to minimize the standard error of the estimate (unexplained variation); (b) getting a good match of characteristics between the properties analyzed and those the analysis is applied to; (c) obtaining a large and diverse sample; and (d) making adjustments for factors that are significant in explaining variation. Ideal samples may not always be available in the market; and the market search may be limited (like an appraisal) because of time and budget constraints.
3. Administrative considerations recognize that Government housing is usually not located in established communities, and that physical characteristics (such as in historical houses, one-room cabins, lookouts or dormitories) are difficult to match in the market. Government quarters are often found in areas influenced by tourism or boom/bust natural resource development that may produce unreasonable rents. Consistency and relative reasonableness, as well as time and budget constraints, must also be taken into consideration.

While trade-offs among these three considerations may result in a less than ideal application of any one of the three principles, the goal is still to produce "reasonable" Monthly Base Rental Rates (MBRR) for quarters that are relatively consistent with the local market rents for similar housing, internally consistent and logical from one unit to another, and represent reasonable value to the employee.

B. MULTIPLE REGRESSION PROCEDURES USED IN RENTAL RATE COMPUTATIONS

There are several reasons for using the regional survey method to arrive at quarters rental rates. These include accuracy, consistency, fairness, cost effectiveness/economy, and the provision in OMB Circular A-45, that regional surveys are the preferred method.

Prior to the use of the regional survey method, quarters Monthly Base Rental Rates (MBRR's) were reset every five years by individually appraising each quarters unit. The appraisal process normally relied upon the use of a small number (2-4) of comparables for each subject Government quarters unit and made logical or market abstracted adjustments to each comparable. In many instances the same comparables were used to establish rental rates for several quarters. Thus the selection of comparables became critical. Individualized appraisals often led to inconsistencies among units in the same area. Many times different agencies, managing similar or identical housing units in the same area, had substantially different rents after analyzing the same rental market. Appraisers valuing several different units using separate sets of comparables and adjustments can also sometimes arrive at rents not logically related to one another. Finally, the appraisal process required a considerable amount of travel, and individualized writing, typing and editing of appraisal reports, which was expensive and very time consuming.

Alternatively, the regional survey method relies upon much larger samples of comparables. These are analyzed, statistically, to objectively determine those factors that are significant in explaining variations in the adjusted rent of each class of comparables. Each class of comparables (houses, apartments and mobile homes) is analyzed separately to determine which locations and physical characteristics are important in explaining the differences in rents among individual rental units and communities. The computer program independently and objectively determines the best set of characteristics (formula) to explain the rental pattern. This formula varies for each survey region and housing class.

The rental rates are based upon an analysis of regional data and local data. The rents in all surveyed communities for each housing class are tested for statistical significance. All significant negative location adjustments are applied to the quarters using that community as their nearest established community.

Positive location (community) adjustments are not applied; so Government housing units near high-rent communities are charged the typical rent for the region as a whole, rather than the typical rent for that high cost location.

The statistical process used is called forward in-and-out, step-wise multiple regression analysis. It takes all of the variables considered and forms a matrix or grid showing how every variable is related to every other variable (cross-correlation matrix). In this phase of the analysis, significant inventory items relating to the dwelling structure are coded into the computer as variables to be tested for their impact, if any, on rent. The variable to be explained (in this case rent) is called the dependent variable, because its value is determined by that of the other (independent) variables.

In forward in-and-out step-wise multiple regression analysis, the independent variable that explains the most variation in the dependent variable (rent) is selected first by the computer and entered as Step 1. The remaining variation is then recomputed, and the independent variable that explains the largest portion of the remaining variation is selected by the computer and entered as Step 2. As each new variable is added, the coefficients of all the previously entered variables are recomputed to take into account relationships among

the independent variables. If a previously entered variable no longer meets the test of significance, it is removed.

As this procedure uses the variation squared, it is highly sensitive to cases with extreme variations from the norm. Since the purpose of a regional survey is to find the typical rent for housing with certain characteristics, it is useful (and mandatory) to cull comparables with unusually high or low rents that are apparently unrelated to their characteristics. Such non-conforming rentals tend to obscure the typical pattern. To accomplish this culling, the following steps are normally taken.

Step 1. A listing of all the comparables is checked to see that the program has properly decoded, that no rental has been entered twice, and that the data is complete for each variable to be tested. The range for each rent class is also checked.

Step 2. Regression Run 1 (square foot base formula): The purified data base is analyzed for the best fit of adjusted rent versus square feet and the logarithm of square feet. This comparison is undertaken because square footage in buildings is generally the variable that explains the most variation of adjusted rent. It is also a universal variable (one that applies to all cases) and a continuous variable (one that changes in many small increments).

Step 3. A listing is produced which shows by community the rent/predicted rent ratio of each private rental sample. The predicted rent is one computed using the square foot base formula derived in step 2. The purpose of this listing is to screen out individual rentals whose ratios are far out of line relative to other rental comparables in the same community.

Step 4. A scattergram of rentals for each class, showing adjusted rent by square feet, is produced to visually display the data. These scattergrams, and the listings produced in Step 3, above, are used to remove samples with unusually high or low rents in each size grouping. A separate variable for each of the remaining communities is then entered into the next step, the full regression analysis, to see if it has a statistically significant location adjustment after other adjustments have been made. This run and a crosstab run of physical features allows for selection of other variables that are significantly represented and widely (geographically) distributed. These variables are turned into dummy (yes/no) and combination variables. Continuous and discrete variables are entered as simple variables, logarithmic transformations, and in logical combinations.

Step 5. (First Full Regression Run). The screened samples for each housing class to be analyzed, along with the variables to be tested, are analyzed to find coefficients for the significant variables ones. The results are checked for logic and cross-correlation; normally only one form of a variable is allowed to stay in the equation. Variables with illogical results are checked to find reasons for such deviation from expected results. Such variables are normally dropped from subsequent regression runs. Sometimes the samples containing such variables are culled; however, that action (culling samples) is uncommon.

Step 6. (Other Full Regression Runs). The full regression analysis is rerun without the illogical variables and/or dropped cases. If the end results look reasonable, the coefficients determined by regression analysis are used to compute Monthly Base Rental Rates (MBRR's) for individual Government-furnished quarters.

Step 7. (Predicted Rent Tables). The coefficients of each satisfactory regression run are put into a computer program which produces a table of predicted quarters MBRR's. The base values and all possible combinations of adjustments are reviewed to ensure the results are reliable for the full range of values. If not, the cause of the problem is diagnosed and corrected, and the regression analysis is rerun, producing a revised set of coefficients. Then Step 6 is repeated, and a new set of rent tables is produced.

V. ESTABLISHMENT OF MONTHLY BASE RENTAL RATES (MBRR)

A. USE OF BASE RENT CHARTS

Although rental computations have been automated, producing Monthly Base Rental Rates (MBRR's) and final Net Rents for most quarters, housing managers should understand the methodology used in determining the rental rates. Therefore, a set of charts has been prepared to allow the manual computation of the MBRR's for each class of rental housing. The charts have been constructed as size/age tables for the three major categories of housing (houses, apartments and mobile homes). By knowing the gross square feet of the livable area (size), the age, and the housing class of a building being used as quarters, one can determine the base rent from the proper table. The charts also contain columns and/or footnotes of rent adjustments which modify the rent from the size/age table to produce a MBRR for an individual quarters unit. **The value of one refrigerator and one stove is included in the rents listed in Tables 3a-d, 4a-d and 5a-c.** Therefore, if the Government does not provide a refrigerator or a range in the quarters, the value of each non-provided appliance should be subtracted from the monthly rent. The current values of a refrigerator and range are shown in Table 18 of this report, and may be adjusted annually by the QMIS Program Office to reflect changes in the Consumer Price Index (CPI) which may occur following the issuance of this report. In selecting the appropriate rent table, it is important to remember that the **design of the quarters, not its use, determines its category.** Thus, a house or an apartment unit **designed** to be occupied by an individual or a family, but which is actually used to house unrelated individuals, would be valued by the category for which it was designed to be used, rather than as a bunkhouse/dormitory. Where, however, a structure is not designed for occupancy by an individual, or family, or has been substantially modified to house individuals on a dormitory basis, it would be appropriate to apply bunkhouse/dormitory rates. Thus, an unmodified three-bedroom house with a **planned occupancy** of six unrelated individuals (normally two persons per bedroom) would have a rental rate determined by calculating the rental rate for a three-bedroom house and then dividing that rate by six. This rate would change if the number of **planned** occupants changed. If the house were later **structurally modified** to be used as a bunkhouse/dormitory, the rate then would be the dormitory rate.

Based upon information provided by the contractor, deductions from the monthly contract rental rate of each rental sample were made for the contributory costs of utilities, appliances, furnishings and services, provided and included in the contract rent. No deductions were made for central air conditioners, refrigerators or ranges; however, if a refrigerator or range was missing, the value was added to the adjusted rent. Central air conditioners are valued at their contributory value, if any. The resulting adjusted monthly contract rental rate represents the contributory value of the dwelling structure equipped with a refrigerator and a range.

The establishment of final monthly quarters rental charges for houses, apartments, mobile homes and cabins/lookouts requires the addition of charges for Government-provided utilities, services, appliances and furnishings. Conversely, **deductions** are required for the values of ranges and refrigerators when they are not provided by the Government.

There are a total of eleven rental rate charts: four charts for single-family housing, four charts for apartments, and three charts for mobile homes. Instructions for computing rental rates for cabins, bunkhouses and dormitories, transient quarters and trailer spaces are found in Sections V.E, V.F, V.G and V.H, respectively. Because OMB Circular A-45 excludes tents from the definition of "rental quarters," there is no charge for the provision of tents.

The use of the charts is fairly simple. First, find the chart for the category into which the GFQ fits. Next, round the square feet **down** to the nearest hundreds of square feet. Thus, if a unit has 980 square feet, the row labeled 900 SQFT would be used. Then the age should be rounded **up** to the nearest age increment. If the dwelling at issue was built in 1978, its age would be computed as 2000 (the current year) minus 1978 (the year built). Thus, in this instance, the unit is $2000 - 1978 = 22$ years old; and the column headed by "25 YEARS OLD" should then be followed down to the 900 SQFT row to obtain the size/age adjusted rent.

The rent charts also have various location adjustments, as well as adjustments for physical features such as the number of bathrooms, the type of garage facilities, the condition of the housing, etc. These should be subtracted from, or added to, the size/age adjusted rent, as specified, to determine the MBRR.

When computing the final biweekly rent (net rent) to be paid, the MBRR must be adjusted to include the value of Government-provided related facilities (utilities, appliances, furnishings and services); and the administrative adjustments prescribed in OMB Circular A-45. Use Form DI 1880, Rent Computation Schedule, or similar form as may be used by agencies other than DOI.

Where a dwelling is larger than the highest square footage in the chart pertinent to that unit, use the size/age rent and adjustments of the bottom (largest SQFT) row. This may eliminate the need for some administrative adjustments due to excess size of the housing. If a dwelling is smaller than the smallest square footage, use the lowest square footage listed on the chart.

The rent for a dwelling with more than 4 bedrooms (3 bedrooms for apartments and mobile homes) is calculated as if the unit had 4 bedrooms (3 bedrooms for apartments and mobile homes). In addition, the carport charge is the same regardless of the size of the carport; the maximum garage charge is the amount for a 2-car garage; and the fireplace charge is the same for one or more fireplaces. For rental calculation purposes a "cap" of 3 bathrooms applies. Therefore, assume 3 bathrooms when applying the bathrooms charge in the rent charts shown in tables 3a-d, 4a-d and 5a-c.

To assist in the calculation of quarters MBRR's, examples are provided in the following pages. While the rates appearing in the following tables should allow you to establish MBRR's for essentially all of your properties, we recognize that we might not have anticipated all situations and conditions. Therefore, housing managers should use professional discretion to set rates for truly unusual situations. In cases where you must use some other method to establish rates, please notify the National Business Center, Products & Services, Quarters Operations Office (Code D-2910), 7301 West Mansfield Avenue, Lakewood, CO

80235-2230; telephone **303-969-7240**; fax 303-969-7173. You should explain the conditions, the rate used, and your reasoning so that we may anticipate such circumstances in the future. You should retain the documentation for such actions in your files.

B. SINGLE FAMILY HOUSING

For single family detached houses, including plexed dwellings and townhouses, use the rental chart which appropriately describes the housing class and the number of bedrooms of the subject quarters. The charts for houses are in tables 3a through 3d.

Assume for example, a 3-bedroom, 1 1/2-bath house, that was built in 1957 and which has a 1 car garage, a fireplace, and 1,537 gross square feet of living space. The house, located near Willcox, AZ is fair in both exterior and interior condition.

First, the chart for 3-bedroom, good condition, 1 bathroom, houses (Table 3b) should be located and used. These charts are baseline charts, which assume that each house is in good condition inside and outside and has one full bathroom. Therefore, if the house is in good condition inside and outside and has one bathroom, no additional computations are needed. If there is a deviation from either good inside or outside condition or there are less or more bathrooms than one, then the computations must be changed as discussed below. In the first step, Table 3b is selected as the proper chart for 3-bedroom houses.

Next, the size (gross finished floor space) should be rounded **down** to the nearest 100 square feet (from 1,537 to 1,500 sqft). Under the column headed "**SQFT**," the figure 1,500 should be located. Further adjustments will be taken from this row.

Finally, the appropriate age column should be selected. The house in this example is $2000 - 1957 = 43$ years old. The age should be rounded **up** to the next highest age column, which, in this case, is the column headed "**45 YRS OLD**." Follow this column down to the 1,500 square feet row to obtain the size/age "table rent" of \$517.

The first adjustment is the extra bathroom charge. Follow the column headed "**PER EXTRA BATHROOM**" down to the 1,500 SQFT row to find a charge of \$84 for a full extra bathroom. As the house in this example has only 1/2 of an extra bathroom, the adjustment is $\$84 \times .5$ (1/2 extra bathroom) = \$42.00. Add \$42 to the rent.

The second and third adjustments are made for a fair exterior and a fair interior condition. Follow the column headed "**FAIR EXTERIOR/INTERIOR***" down to the 1,500 SQFT row. The amount reflects a deduction of \$20 for a house with a fair exterior **and** a deduction of \$20 for a house with a fair interior. Since both the exterior and interior are in fair condition, the total adjustment is \$-40.

The fourth adjustment is for a one-car garage. Follow the column headed "**GARAGE (PER CAR)**" down to the 1,500 SQFT row. \$46 should be charged for each car the garage is designed to accommodate. Since the house in this example has a 1-car garage, multiply the amount shown for one car (\$46) times 1 to reflect the value of a 1-car garage ($1 \times \$46 = \46). Add \$46 to the rent.

The fifth adjustment is made for the fireplace. Follow the column headed "**FIREPLACES**" down to the 1,500 SQFT row. The amount reflects an addition of \$65 for one or more fireplaces. Add \$65 to the rent for the fireplace.

The final adjustment is the community adjustment. The house in this example is located near Willcox, AZ. The notes beneath the table (see "**COMMUNITY ADJUSTMENTS**") reflect that Willcox, AZ receives an adjustment of -\$168. As instructed, subtract \$168 from the rent. Community adjustments are given only to communities in which the market rents are **lower** than the regional average level of rents. Communities not listed in the tables have rents which are equal to or higher than the regional average rent and do not receive community adjustments.

The last step is to round the resulting MBRR to the nearest whole dollar. If rounding is to be exercised, amounts equal to \$.50 or more should be rounded **up** to the next highest dollar; amounts equal to \$.49 or less should be rounded **down** to the next lowest dollar. The decision to round is discretionary.

In summary, the adjustments that produce the Monthly Base Rental Rate for the house used in this example are shown below.

Table Rent (1,500 SQFT/45 yrs. old)	\$517.00
Extra Bath Adjustment (.5 X \$84)	+ 42.00
Fair Exterior Condition Adjustment	- 20.00
Fair Interior Condition Adjustment	- 20.00
Garage Adjustment (Per Car X \$46)	+ 46.00
Fireplace Adjustment	+ 65.00
Community Adjustment (Willcox, AZ)	<u>-168.00</u>
Monthly Base Rent	\$462.00

Monthly Base Rental Rate (Rounded) \$462.00

TABLE 3a MONTHLY BASE RENT - GOOD CONDITION 4 BDR, 1 BATH, HOUSES

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION 4 BEDROOM, 1 BATHROOM HOUSES

SQFT	5 YRS OLD	15 YRS OLD	25 YRS OLD	35 YRS OLD	45 YRS OLD	55 YRS OLD	75+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER -IOR/ INTER -IOR*	FAIR EXTER -IOR/ INTER -IOR*	POOR EXTER -IOR/ INTER -IOR*	A/C (REF)	GAR- AGE PER (CAR)	FIRE- PLACES	PLEX
700	\$552	\$539	\$532	\$528	\$524	\$521	\$517	\$+39	\$+50	\$-9	\$-14	\$+52	\$+46	\$+65	\$-30
800	\$558	\$545	\$538	\$533	\$530	\$527	\$522	\$+45	\$+50	\$-10	\$-15	\$+52	\$+46	\$+65	\$-30
900	\$564	\$550	\$543	\$539	\$535	\$532	\$528	\$+50	\$+50	\$-12	\$-17	\$+52	\$+46	\$+65	\$-30
1000	\$569	\$556	\$549	\$544	\$541	\$538	\$533	\$+56	\$+50	\$-13	\$-18	\$+52	\$+46	\$+65	\$-30
1100	\$575	\$562	\$555	\$550	\$546	\$543	\$539	\$+62	\$+50	\$-14	\$-19	\$+52	\$+46	\$+65	\$-30
1200	\$580	\$567	\$560	\$556	\$552	\$549	\$545	\$+67	\$+50	\$-16	\$-21	\$+52	\$+46	\$+65	\$-30
1300	\$586	\$573	\$566	\$561	\$558	\$555	\$550	\$+73	\$+50	\$-17	\$-22	\$+52	\$+46	\$+65	\$-30
1400	\$592	\$578	\$571	\$567	\$563	\$560	\$556	\$+78	\$+50	\$-18	\$-23	\$+52	\$+46	\$+65	\$-30
1500	\$597	\$584	\$577	\$572	\$569	\$566	\$561	\$+84	\$+50	\$-20	\$-25	\$+52	\$+46	\$+65	\$-30
1600	\$603	\$590	\$583	\$578	\$574	\$571	\$567	\$+90	\$+50	\$-21	\$-26	\$+52	\$+46	\$+65	\$-30
1700	\$608	\$595	\$588	\$584	\$580	\$577	\$573	\$+95	\$+50	\$-22	\$-27	\$+52	\$+46	\$+65	\$-30
1800	\$614	\$601	\$594	\$589	\$586	\$583	\$578	\$+101	\$+50	\$-23	\$-28	\$+52	\$+46	\$+65	\$-30
1900	\$620	\$606	\$599	\$595	\$591	\$588	\$584	\$+106	\$+50	\$-25	\$-30	\$+52	\$+46	\$+65	\$-30
2000	\$625	\$612	\$605	\$600	\$597	\$594	\$589	\$+112	\$+50	\$-26	\$-31	\$+52	\$+46	\$+65	\$-30
2100	\$631	\$618	\$611	\$606	\$602	\$599	\$595	\$+118	\$+50	\$-27	\$-32	\$+52	\$+46	\$+65	\$-30
2200	\$636	\$623	\$616	\$612	\$608	\$605	\$601	\$+123	\$+50	\$-29	\$-34	\$+52	\$+46	\$+65	\$-30
2300	\$642	\$629	\$622	\$617	\$614	\$611	\$606	\$+129	\$+50	\$-30	\$-35	\$+52	\$+46	\$+65	\$-30

ADDITIONAL ADJUSTMENTS:

STRUCTURAL ADJUSTMENTS:

CENTRAL EVAPORATIVE AIR CONDITIONING ADD \$30 CARPORT ADD \$25

COMMUNITY ADJUSTMENTS:

AJO, AZ.	-\$24;	BULLHEAD CITY, AZ.	-\$60;	CASA GRANDE, AZ.	-\$49;	COOLIDGE, AZ.	-\$79;
GILA BEND, AZ.	-\$155;	GLOBE, AZ.	-\$91;	HOLBROOK, AZ.	-\$147;	PARKER, AZ.	-\$154;
SHOW LOW, AZ.	-\$24;	SIERRA VISTA, AZ.	-\$37;	SPRINGERVILLE, AZ.	-\$238;	WILLCOX, AZ.	-\$168;
WINSLOW, AZ.	-\$97;	ALTURAS, CA.	-\$134;	BORON, CA.	-\$184;	LONE PINE, CA.	-\$25;
TRONA, CA.	-\$256;	29 PALMS, CA.	-\$62;	YUCCA VALLEY, CA.	-\$130;	BATTLE MOUNTAIN, NV	-\$84;
TONOPAH, NV.	-\$31;	LAKEVIEW, OR.	-\$161;	CEDAR CITY, UT.	-\$98;	KANAB, UT.	-\$126;

* - IF BOTH THE INTERIOR AND EXTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

TABLE 3b MONTHLY BASE RENT - GOOD CONDITION 3 BDR, 1 BATH, HOUSES

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION 3 BEDROOM, 1 BATHROOM HOUSES

SQFT	5 YRS OLD	15 YRS OLD	25 YRS OLD	35 YRS OLD	45 YRS OLD	55 YRS OLD	75+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER -IOR/ INTER -IOR*	FAIR EXTER -IOR/ INTER -IOR*	POOR EXTER -IOR/ INTER -IOR*	A/C (REF)	GAR- AGE PER (CAR)	FIRE- PLACES	PLEX
500	\$490	\$477	\$470	\$465	\$461	\$459	\$454	\$+28	\$+50	\$-7	\$-12	\$+52	\$+46	\$+65	\$-30
600	\$496	\$482	\$475	\$471	\$467	\$464	\$460	\$+34	\$+50	\$-8	\$-13	\$+52	\$+46	\$+65	\$-30
700	\$501	\$488	\$481	\$476	\$473	\$470	\$465	\$+39	\$+50	\$-9	\$-14	\$+52	\$+46	\$+65	\$-30
800	\$507	\$494	\$487	\$482	\$478	\$475	\$471	\$+45	\$+50	\$-10	\$-15	\$+52	\$+46	\$+65	\$-30
900	\$512	\$499	\$492	\$487	\$484	\$481	\$476	\$+50	\$+50	\$-12	\$-17	\$+52	\$+46	\$+65	\$-30
1000	\$518	\$505	\$498	\$493	\$489	\$487	\$482	\$+56	\$+50	\$-13	\$-18	\$+52	\$+46	\$+65	\$-30
1100	\$524	\$510	\$503	\$499	\$495	\$492	\$488	\$+62	\$+50	\$-14	\$-19	\$+52	\$+46	\$+65	\$-30
1200	\$529	\$516	\$509	\$504	\$501	\$498	\$493	\$+67	\$+50	\$-16	\$-21	\$+52	\$+46	\$+65	\$-30
1300	\$535	\$522	\$515	\$510	\$506	\$503	\$499	\$+73	\$+50	\$-17	\$-22	\$+52	\$+46	\$+65	\$-30
1400	\$540	\$527	\$520	\$515	\$512	\$509	\$504	\$+78	\$+50	\$-18	\$-23	\$+52	\$+46	\$+65	\$-30
1500	\$546	\$533	\$526	\$521	\$517	\$515	\$510	\$+84	\$+50	\$-20	\$-25	\$+52	\$+46	\$+65	\$-30
1600	\$552	\$538	\$531	\$527	\$523	\$520	\$516	\$+90	\$+50	\$-21	\$-26	\$+52	\$+46	\$+65	\$-30
1700	\$557	\$544	\$537	\$532	\$529	\$526	\$521	\$+95	\$+50	\$-22	\$-27	\$+52	\$+46	\$+65	\$-30
1800	\$563	\$550	\$543	\$538	\$534	\$531	\$527	\$+101	\$+50	\$-23	\$-28	\$+52	\$+46	\$+65	\$-30
1900	\$568	\$555	\$548	\$543	\$540	\$537	\$532	\$+106	\$+50	\$-25	\$-30	\$+52	\$+46	\$+65	\$-30
2000	\$574	\$561	\$554	\$549	\$545	\$543	\$538	\$+112	\$+50	\$-26	\$-31	\$+52	\$+46	\$+65	\$-30
2100	\$580	\$566	\$559	\$555	\$551	\$548	\$544	\$+118	\$+50	\$-27	\$-32	\$+52	\$+46	\$+65	\$-30

ADDITIONAL ADJUSTMENTS:

STRUCTURAL ADJUSTMENTS:

CENTRAL EVAPORATIVE AIR CONDITIONING ADD \$30 CARPORT ADD \$25

COMMUNITY ADJUSTMENTS:

AJO, AZ.	-\$24;	BULLHEAD CITY, AZ.	-\$60;	CASA GRANDE, AZ.	-\$49;	COOLIDGE, AZ.	-\$79;
GILA BEND, AZ.	-\$155;	GLOBE, AZ.	-\$91;	HOLBROOK, AZ.	-\$147;	PARKER, AZ.	-\$154;
SHOW LOW, AZ.	-\$24;	SIERRA VISTA, AZ.	-\$37;	SPRINGERVILLE, AZ.	-\$238;	WILLCOX, AZ.	-\$168;
WINSLOW, AZ.	-\$97;	ALTURAS, CA.	-\$134;	BORON, CA.	-\$184;	LONE PINE, CA.	-\$25;
TRONA, CA.	-\$256;	29 PALMS, CA.	-\$62;	YUCCA VALLEY, CA.	-\$130;	BATTLE MOUNTAIN, NV	-\$84;
TONOPAH, NV.	-\$31;	LAKEVIEW, OR.	-\$161;	CEDAR CITY, UT.	-\$98;	KANAB, UT.	-\$126;

* - IF BOTH THE INTERIOR AND EXTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

TABLE 3c MONTHLY BASE RENT - GOOD CONDITION 2 BDR, 1 BATH, HOUSES

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION 2 BEDROOM, 1 BATHROOM HOUSES

SQFT	5 YRS OLD	15 YRS OLD	25 YRS OLD	35 YRS OLD	45 YRS OLD	55 YRS OLD	75+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER -IOR/ INTER -IOR*	FAIR EXTER -IOR/ INTER -IOR*	POOR EXTER -IOR/ INTER -IOR*	A/C (REF)	GAR- AGE PER (CAR)	FIRE- PLACES	PLEX
300	\$416	\$403	\$396	\$391	\$388	\$385	\$380	\$+17	\$+50	\$-5	\$-9	\$+52	\$+46	\$+65	\$-30
400	\$422	\$408	\$402	\$397	\$393	\$390	\$386	\$+22	\$+50	\$-5	\$-10	\$+52	\$+46	\$+65	\$-30
500	\$427	\$414	\$407	\$402	\$399	\$396	\$391	\$+28	\$+50	\$-7	\$-12	\$+52	\$+46	\$+65	\$-30
600	\$433	\$420	\$413	\$408	\$404	\$402	\$397	\$+34	\$+50	\$-8	\$-13	\$+52	\$+46	\$+65	\$-30
700	\$439	\$425	\$418	\$414	\$410	\$407	\$403	\$+39	\$+50	\$-9	\$-14	\$+52	\$+46	\$+65	\$-30
800	\$444	\$431	\$424	\$419	\$416	\$413	\$408	\$+45	\$+50	\$-10	\$-15	\$+52	\$+46	\$+65	\$-30
900	\$450	\$436	\$430	\$425	\$421	\$418	\$414	\$+50	\$+50	\$-12	\$-17	\$+52	\$+46	\$+65	\$-30
1000	\$455	\$442	\$435	\$430	\$427	\$424	\$419	\$+56	\$+50	\$-13	\$-18	\$+52	\$+46	\$+65	\$-30
1100	\$461	\$448	\$441	\$436	\$432	\$430	\$425	\$+62	\$+50	\$-14	\$-19	\$+52	\$+46	\$+65	\$-30
1200	\$467	\$453	\$446	\$442	\$438	\$435	\$431	\$+67	\$+50	\$-16	\$-21	\$+52	\$+46	\$+65	\$-30
1300	\$472	\$459	\$452	\$447	\$444	\$441	\$436	\$+73	\$+50	\$-17	\$-22	\$+52	\$+46	\$+65	\$-30
1400	\$478	\$464	\$458	\$453	\$449	\$446	\$442	\$+78	\$+50	\$-18	\$-23	\$+52	\$+46	\$+65	\$-30
1500	\$483	\$470	\$463	\$458	\$455	\$452	\$447	\$+84	\$+50	\$-20	\$-25	\$+52	\$+46	\$+65	\$-30
1600	\$489	\$476	\$469	\$464	\$460	\$458	\$453	\$+90	\$+50	\$-21	\$-26	\$+52	\$+46	\$+65	\$-30
1700	\$495	\$481	\$474	\$470	\$466	\$463	\$459	\$+95	\$+50	\$-22	\$-27	\$+52	\$+46	\$+65	\$-30
1800	\$500	\$487	\$480	\$475	\$472	\$469	\$464	\$+101	\$+50	\$-23	\$-28	\$+52	\$+46	\$+65	\$-30
1900	\$506	\$492	\$486	\$481	\$477	\$474	\$470	\$+106	\$+50	\$-25	\$-30	\$+52	\$+46	\$+65	\$-30

ADDITIONAL ADJUSTMENTS:

STRUCTURAL ADJUSTMENTS:

CENTRAL EVAPORATIVE AIR CONDITIONING ADD \$30 CARPORT ADD \$25

COMMUNITY ADJUSTMENTS:

AJO, AZ.	-\$24;	BULLHEAD CITY, AZ.	-\$60;	CASA GRANDE, AZ.	-\$49;	COOLIDGE, AZ.	-\$79;
GILA BEND, AZ.	-\$155;	GLOBE, AZ.	-\$91;	HOLBROOK, AZ.	-\$147;	PARKER, AZ.	-\$154;
SHOW LOW, AZ.	-\$24;	SIERRA VISTA, AZ.	-\$37;	SPRINGERVILLE, AZ.	-\$238;	WILLCOX, AZ.	-\$168;
WINSLOW, AZ.	-\$97;	ALTURAS, CA.	-\$134;	BORON, CA.	-\$184;	LONE PINE, CA.	-\$25;
TRONA, CA.	-\$256;	29 PALMS, CA.	-\$62;	YUCCA VALLEY, CA.	-\$130;	BATTLE MOUNTAIN, NV	-\$84;
TONOPAH, NV.	-\$31;	LAKEVIEW, OR.	-\$161;	CEDAR CITY, UT.	-\$98;	KANAB, UT.	-\$126;

* - IF BOTH THE INTERIOR AND EXTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

TABLE 3d MONTHLY BASE RENT - GOOD CONDITION 1 BDR, 1 BATH, HOUSES

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION 1 BEDROOM, 1 BATHROOM HOUSES

SQFT	5 YRS OLD	15 YRS OLD	25 YRS OLD	35 YRS OLD	45 YRS OLD	55 YRS OLD	75+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER -IOR/ INTER -IOR*	FAIR EXTER -IOR/ INTER -IOR*	POOR EXTER -IOR/ INTER -IOR*	A/C (REF)	GAR- AGE PER (CAR)	FIRE- PLACES	PLEX
100	\$324	\$311	\$304	\$299	\$296	\$293	\$288	\$+6	\$+50	\$-5	\$-6	\$+52	\$+46	\$+65	\$-30
200	\$330	\$316	\$309	\$305	\$301	\$298	\$294	\$+11	\$+50	\$-5	\$-8	\$+52	\$+46	\$+65	\$-30
300	\$335	\$322	\$315	\$310	\$307	\$304	\$299	\$+17	\$+50	\$-5	\$-9	\$+52	\$+46	\$+65	\$-30
400	\$341	\$328	\$321	\$316	\$312	\$309	\$305	\$+22	\$+50	\$-5	\$-10	\$+52	\$+46	\$+65	\$-30
500	\$347	\$333	\$326	\$322	\$318	\$315	\$311	\$+28	\$+50	\$-7	\$-12	\$+52	\$+46	\$+65	\$-30
600	\$352	\$339	\$332	\$327	\$324	\$321	\$316	\$+34	\$+50	\$-8	\$-13	\$+52	\$+46	\$+65	\$-30
700	\$358	\$344	\$337	\$333	\$329	\$326	\$322	\$+39	\$+50	\$-9	\$-14	\$+52	\$+46	\$+65	\$-30
800	\$363	\$350	\$343	\$338	\$335	\$332	\$327	\$+45	\$+50	\$-10	\$-15	\$+52	\$+46	\$+65	\$-30
900	\$369	\$356	\$349	\$344	\$340	\$337	\$333	\$+50	\$+50	\$-12	\$-17	\$+52	\$+46	\$+65	\$-30
1000	\$375	\$361	\$354	\$350	\$346	\$343	\$339	\$+56	\$+50	\$-13	\$-18	\$+52	\$+46	\$+65	\$-30
1100	\$380	\$367	\$360	\$355	\$352	\$349	\$344	\$+62	\$+50	\$-14	\$-19	\$+52	\$+46	\$+65	\$-30
1200	\$386	\$372	\$365	\$361	\$357	\$354	\$350	\$+67	\$+50	\$-16	\$-21	\$+52	\$+46	\$+65	\$-30
1300	\$391	\$378	\$371	\$366	\$363	\$360	\$355	\$+73	\$+50	\$-17	\$-22	\$+52	\$+46	\$+65	\$-30
1400	\$397	\$384	\$377	\$372	\$368	\$365	\$361	\$+78	\$+50	\$-18	\$-23	\$+52	\$+46	\$+65	\$-30
1500	\$403	\$389	\$382	\$378	\$374	\$371	\$367	\$+84	\$+50	\$-20	\$-25	\$+52	\$+46	\$+65	\$-30

ADDITIONAL ADJUSTMENTS:

STRUCTURAL ADJUSTMENTS:

CENTRAL EVAPORATIVE AIR CONDITIONING ADD \$30 CARPORT ADD \$25

COMMUNITY ADJUSTMENTS:

AJO, AZ.	-\$24;	BULLHEAD CITY, AZ.	-\$60;	CASA GRANDE, AZ.	-\$49;	COOLIDGE, AZ.	-\$79;
GILA BEND, AZ.	-\$155;	GLOBE, AZ.	-\$91;	HOLBROOK, AZ.	-\$147;	PARKER, AZ.	-\$154;
SHOW LOW, AZ.	-\$24;	SIERRA VISTA, AZ.	-\$37;	SPRINGERVILLE, AZ.	-\$238;	WILLCOX, AZ.	-\$168;
WINSLOW, AZ.	-\$97;	ALTURAS, CA.	-\$134;	BORON, CA.	-\$184;	LONE PINE, CA.	-\$25;
TRONA, CA.	-\$256;	29 PALMS, CA.	-\$62;	YUCCA VALLEY, CA.	-\$130;	BATTLE MOUNTAIN, NV	-\$84;
TONOPAH, NV.	-\$31;	LAKEVIEW, OR.	-\$161;	CEDAR CITY, UT.	-\$98;	KANAB, UT.	-\$126;

* - IF BOTH THE INTERIOR AND EXTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

C. APARTMENTS

For all apartment units, use the rental chart which appropriately describes the housing class and the number of bedrooms of the subject quarters. The charts for apartments are in Tables 4a through 4d.

Assume a 3-bedroom, 2 bathroom apartment, near Flagstaff, AZ with 1188 square feet. The exterior is in excellent condition; the interior is in good condition. The apartment, which was built in 1996, is 4 years old (2000 - 1996), has a carport, and central refrigerated air conditioning.

First, the three bedroom chart for good condition apartments (Table 4a) should be located and used. These charts are baseline charts, which assume that each apartment is in good condition inside and outside and has one full bathroom. Therefore, if the apartment is in good condition inside and outside and has one bathroom, no additional computations are needed. If there is a deviation from either good inside or outside condition or there are less or more bathrooms than one, then the computations must be changed as discussed below. In the first step, Table 4a is selected as the proper chart for 3-bedroom apartments.

In the second step the size (gross living area) is rounded **down** from 1188 to 1100 square feet. Under the column headed "**SQFT**" the figure 1100 should be located. All further adjustments will be taken from this row.

In the third step the appropriate age column is selected. A 4-year old apartment is less than 5 years old; therefore, the "**5 YRS OLD**" column should be used. A three-bedroom apartment, in good condition with 1100 square feet of living space (gross), and which is 5 years of age, has a "Table Rent" of \$455 per month.

The first adjustment is the extra bathroom adjustment charge. Following the 1100 SQFT row along to the column headed "**PER EXTRA BATHROOM**" you will find a charge of \$63. Add \$63 to the rent.

The second adjustment is for an excellent exterior condition. Follow the 1100 SQFT row across the table to the column headed "**EXCEL EXTERIOR/INTERIOR***" an addition of \$40 is shown. Table 4a assumes the condition to be good and since, in our example, the apartment's interior condition is good, no adjustment is needed for interior condition. Add \$40 for the excellent exterior condition.

The third adjustment is for a carport. Beneath the table, under "**STRUCTURAL ADJUSTMENTS,**" there is an instruction to add \$30 for a carport of any size. As instructed add \$30 to the rent of this apartment.

The fourth adjustment is for central refrigerated air conditioning. Beneath the table, under "**STRUCTURAL ADJUSTMENTS,**" there is an instruction to add \$35 for Central Refrigerated Air Conditioning.

The final adjustment is the community adjustment. The apartment in this example is located near Flagstaff, AZ. The notes beneath the table (see "**COMMUNITY ADJUSTMENTS**") show no adjustment for Flagstaff, AZ. Therefore, rental values in Flagstaff, AZ, for apartments are equal to or greater than the regional average. Since positive community adjustments are not applied, no community adjustment is shown for Flagstaff, AZ.

The last step is to round the resulting MBRR (Monthly Base Rental Rate) to the nearest whole dollar. Any amount resulting in an amount of \$.50 or greater is rounded up; any amount resulting in an amount of \$.49 or less is rounded down. The decision to round is discretionary.

In summary, the Monthly Base Rental Rate for the apartment in this example is determined as follows:

Table Rent (1100 SQFT/5 years old)	\$455.00
Extra Bath Adjustment (1 X \$63)	+63.00
Excellent Exterior Adjustment	+ 40.00
Carport Adjustment	+30.00
Central Refrigerated Air Conditioning Adjustment	+35.00
Location Adjustment (Flagstaff, AZ)	<u>- 00.00</u>
Monthly Base Rental Rate	\$623.00

Monthly Base Rental Rate (Rounded) \$623.00

TABLE 4a MONTHLY BASE RENT - GOOD CONDITION 3 BDR, 1 BATH, APTS

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION 3 BEDROOM, 1 BATHROOM APARTMENTS

SQFT	5 YRS OLD	15 YRS OLD	25 YRS OLD	35 YRS OLD	45 YRS OLD	55 YRS OLD	75+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER IOR/ INTER IOR*	FAIR EXTER- IOR/ INTER- IOR*	POOR EXTER- IOR/ INTER- IOR*	GAR- AGE (ANY SIZE)
600	\$426	\$421	\$416	\$411	\$406	\$401	\$391	\$+34	\$+40	\$-15	\$-40	\$+45
700	\$432	\$427	\$422	\$417	\$412	\$407	\$397	\$+40	\$+40	\$-15	\$-40	\$+45
800	\$438	\$433	\$428	\$423	\$418	\$413	\$403	\$+46	\$+40	\$-15	\$-40	\$+45
900	\$444	\$439	\$434	\$429	\$424	\$419	\$409	\$+51	\$+40	\$-15	\$-40	\$+45
1000	\$449	\$444	\$439	\$434	\$429	\$424	\$414	\$+57	\$+40	\$-15	\$-40	\$+45
1100	\$455	\$450	\$445	\$440	\$435	\$430	\$420	\$+63	\$+40	\$-15	\$-40	\$+45
1200	\$461	\$456	\$451	\$446	\$441	\$436	\$426	\$+68	\$+40	\$-15	\$-40	\$+45
1300	\$466	\$461	\$456	\$451	\$446	\$441	\$431	\$+74	\$+40	\$-15	\$-40	\$+45
1400	\$472	\$467	\$462	\$457	\$452	\$447	\$437	\$+80	\$+40	\$-15	\$-40	\$+45
1500	\$478	\$473	\$468	\$463	\$458	\$453	\$443	\$+86	\$+40	\$-15	\$-40	\$+45
1600	\$483	\$478	\$473	\$468	\$463	\$458	\$448	\$+91	\$+40	\$-15	\$-40	\$+45
1700	\$489	\$484	\$479	\$474	\$469	\$464	\$454	\$+97	\$+40	\$-15	\$-40	\$+45
1800	\$495	\$490	\$485	\$480	\$475	\$470	\$460	\$+103	\$+40	\$-15	\$-40	\$+45

ADDITIONAL ADJUSTMENTS:

STRUCTURAL ADJUSTMENTS:

CARPORT (ANY SIZE): ADD \$30
FIREPLACE(S): ADD \$85

CENTRAL REFRIGERATED AIR CONDITIONING ADD \$35
CENTRAL EVAPORATIVE AIR CONDITIONING ADD \$25

COMMUNITY ADJUSTMENTS:

CASA GRANDE, AZ. -\$120; GILA BEND, AZ. -\$75; GLOBE, AZ. -\$30; HOLBROOK, AZ. -\$84;
SHOW LOW, AZ. -\$60; WINSLOW, AZ. -\$45; KANAB, UT. -\$35;

*IF BOTH THE EXTERIOR AND INTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

TABLE 4b MONTHLY BASE RENT - GOOD CONDITION 2 BDR, 1 BATH, APTS

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION 2 BEDROOM, 1 BATHROOM APARTMENTS

SQFT	5 YRS OLD	15 YRS OLD	25 YRS OLD	35 YRS OLD	45 YRS OLD	55 YRS OLD	75+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER IOR/ INTER IOR*	FAIR EXTER- IOR/ INTER- IOR*	POOR EXTER- IOR/ INTER- IOR*	GAR- AGE (ANY SIZE)
400	\$374	\$369	\$364	\$359	\$354	\$349	\$339	\$+23	\$+40	\$-15	\$-40	\$+45
500	\$379	\$374	\$369	\$364	\$359	\$354	\$344	\$+29	\$+40	\$-15	\$-40	\$+45
600	\$385	\$380	\$375	\$370	\$365	\$360	\$350	\$+34	\$+40	\$-15	\$-40	\$+45
700	\$391	\$386	\$381	\$376	\$371	\$366	\$356	\$+40	\$+40	\$-15	\$-40	\$+45
800	\$397	\$392	\$387	\$382	\$377	\$372	\$362	\$+46	\$+40	\$-15	\$-40	\$+45
900	\$402	\$397	\$392	\$387	\$382	\$377	\$367	\$+51	\$+40	\$-15	\$-40	\$+45
1000	\$408	\$403	\$398	\$393	\$388	\$383	\$373	\$+57	\$+40	\$-15	\$-40	\$+45
1100	\$414	\$409	\$404	\$399	\$394	\$389	\$379	\$+63	\$+40	\$-15	\$-40	\$+45
1200	\$419	\$414	\$409	\$404	\$399	\$394	\$384	\$+68	\$+40	\$-15	\$-40	\$+45
1300	\$425	\$420	\$415	\$410	\$405	\$400	\$390	\$+74	\$+40	\$-15	\$-40	\$+45
1400	\$431	\$426	\$421	\$416	\$411	\$406	\$396	\$+80	\$+40	\$-15	\$-40	\$+45
1500	\$436	\$431	\$426	\$421	\$416	\$411	\$401	\$+86	\$+40	\$-15	\$-40	\$+45
1600	\$442	\$437	\$432	\$427	\$422	\$417	\$407	\$+91	\$+40	\$-15	\$-40	\$+45

ADDITIONAL ADJUSTMENTS:

STRUCTURAL ADJUSTMENTS:

CARPORT (ANY SIZE): ADD \$30
FIREPLACE(S): ADD \$85

CENTRAL REFRIGERATED AIR CONDITIONING ADD \$35
CENTRAL EVAPORATIVE AIR CONDITIONING ADD \$25

COMMUNITY ADJUSTMENTS:

CASA GRANDE, AZ. -\$120; GILA BEND, AZ. -\$75; GLOBE, AZ. -\$30; HOLBROOK, AZ. -\$84;
SHOW LOW, AZ. -\$60; WINSLOW, AZ. -\$45; KANAB, UT. -\$35;

*IF BOTH THE EXTERIOR AND INTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

TABLE 4c MONTHLY BASE RENT - GOOD CONDITION 1 BDR, 1 BATH, APTS

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION 1 BEDROOM, 1 BATHROOM APARTMENTS

SQFT	5 YRS OLD	15 YRS OLD	25 YRS OLD	35 YRS OLD	45 YRS OLD	55 YRS OLD	75+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER IOR/ INTER IOR*	FAIR EXTER- IOR/ INTER- IOR*	POOR EXTER- IOR/ INTER- IOR*	GAR- AGE (ANY SIZE)
300	\$315	\$310	\$305	\$300	\$295	\$290	\$280	\$+17	\$+40	\$-15	\$-40	\$+45
400	\$321	\$316	\$311	\$306	\$301	\$296	\$286	\$+23	\$+40	\$-15	\$-40	\$+45
500	\$326	\$321	\$316	\$311	\$306	\$301	\$291	\$+29	\$+40	\$-15	\$-40	\$+45
600	\$332	\$327	\$322	\$317	\$312	\$307	\$297	\$+34	\$+40	\$-15	\$-40	\$+45
700	\$338	\$333	\$328	\$323	\$318	\$313	\$303	\$+40	\$+40	\$-15	\$-40	\$+45
800	\$343	\$338	\$333	\$328	\$323	\$318	\$308	\$+46	\$+40	\$-15	\$-40	\$+45
900	\$349	\$344	\$339	\$334	\$329	\$324	\$314	\$+51	\$+40	\$-15	\$-40	\$+45
1000	\$355	\$350	\$345	\$340	\$335	\$330	\$320	\$+57	\$+40	\$-15	\$-40	\$+45
1100	\$360	\$355	\$350	\$345	\$340	\$335	\$325	\$+63	\$+40	\$-15	\$-40	\$+45
1200	\$366	\$361	\$356	\$351	\$346	\$341	\$331	\$+68	\$+40	\$-15	\$-40	\$+45
1300	\$372	\$367	\$362	\$357	\$352	\$347	\$337	\$+74	\$+40	\$-15	\$-40	\$+45
1400	\$378	\$373	\$368	\$363	\$358	\$353	\$343	\$+80	\$+40	\$-15	\$-40	\$+45
1500	\$383	\$378	\$373	\$368	\$363	\$358	\$348	\$+86	\$+40	\$-15	\$-40	\$+45

ADDITIONAL ADJUSTMENTS:

STRUCTURAL ADJUSTMENTS:

CARPORT (ANY SIZE): ADD \$30
FIREPLACE(S): ADD \$85

CENTRAL REFRIGERATED AIR CONDITIONING ADD \$35
CENTRAL EVAPORATIVE AIR CONDITIONING ADD \$25

COMMUNITY ADJUSTMENTS:

CASA GRANDE, AZ. -\$120; GILA BEND, AZ. -\$75; GLOBE, AZ. -\$30; HOLBROOK, AZ. -\$84;
SHOW LOW, AZ. -\$60; WINSLOW, AZ. -\$45; KANAB, UT. -\$35;

*IF BOTH THE EXTERIOR AND INTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

TABLE 4d MONTHLY BASE RENT - GOOD CONDITION 0 BDR, 1 BATH, APTS

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION 0 BEDROOM, 1 BATHROOM APARTMENTS

SQFT	5 YRS OLD	15 YRS OLD	25 YRS OLD	35 YRS OLD	45 YRS OLD	55 YRS OLD	75+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER IOR/ INTER IOR*	FAIR EXTER- IOR/ INTER- IOR*	POOR EXTER- IOR/ INTER- IOR*	GAR- AGE (ANY SIZE)
100	\$228	\$223	\$218	\$213	\$208	\$203	\$193	\$+6	\$+40	\$-15	\$-40	\$+45
200	\$234	\$229	\$224	\$219	\$214	\$209	\$199	\$+11	\$+40	\$-15	\$-40	\$+45
300	\$240	\$235	\$230	\$225	\$220	\$215	\$205	\$+17	\$+40	\$-15	\$-40	\$+45
400	\$246	\$241	\$236	\$231	\$226	\$221	\$211	\$+23	\$+40	\$-15	\$-40	\$+45
500	\$251	\$246	\$241	\$236	\$231	\$226	\$216	\$+29	\$+40	\$-15	\$-40	\$+45
600	\$257	\$252	\$247	\$242	\$237	\$232	\$222	\$+34	\$+40	\$-15	\$-40	\$+45
700	\$263	\$258	\$253	\$248	\$243	\$238	\$228	\$+40	\$+40	\$-15	\$-40	\$+45
800	\$268	\$263	\$258	\$253	\$248	\$243	\$233	\$+46	\$+40	\$-15	\$-40	\$+45
900	\$274	\$269	\$264	\$259	\$254	\$249	\$239	\$+51	\$+40	\$-15	\$-40	\$+45
1000	\$280	\$275	\$270	\$265	\$260	\$255	\$245	\$+57	\$+40	\$-15	\$-40	\$+45
1100	\$285	\$280	\$275	\$270	\$265	\$260	\$250	\$+63	\$+40	\$-15	\$-40	\$+45

ADDITIONAL ADJUSTMENTS:

STRUCTURAL ADJUSTMENTS:

CARPORT (ANY SIZE): ADD \$30
FIREPLACE(S): ADD \$85

CENTRAL REFRIGERATED AIR CONDITIONING ADD \$35
CENTRAL EVAPORATIVE AIR CONDITIONING ADD \$25

COMMUNITY ADJUSTMENTS:

CASA GRANDE, AZ. -\$120; GILA BEND, AZ. -\$75; GLOBE, AZ. -\$30; HOLBROOK, AZ. -\$84;
SHOW LOW, AZ. -\$60; WINSLOW, AZ. -\$45; KANAB, UT. -\$35;

*IF BOTH THE EXTERIOR AND INTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

D. MOBILE HOMES, TRAVEL TRAILERS, AND HOUSEBOATS

For these housing classes, use the mobile home base rental charts (Tables 5a-c). To familiarize the reader with these charts, assume a 775 square foot, 1-bedroom mobile home built in 1971 with a 3/4 bathroom. This mobile home is in poor interior and poor exterior condition and is located near Douglas, AZ. The Monthly Base Rental Rate for the mobile home in this example is calculated from Table 5c as follows.

The 1-bedroom chart for good condition mobile homes (Table 5c) should be located and used. These charts are baseline charts, which assume that each mobile home is in good condition inside and outside and has one full bathroom. Therefore, if the mobile home is in good condition inside and outside and has one full bathroom, no additional computations are needed. If there is a deviation from either good inside or outside condition or there are less or more bathrooms than one, then the computations must be changed accordingly.

First, locate the table for mobile homes in good condition with *one full bathroom* (Table 5c). Next, the gross square feet of living area should be rounded down to 700 square feet, and the **age** (2000 - 1971 = 29 years) is rounded **up** to 30 years. The column headed "**SQFT**" is followed **down** to 700. All other adjustments are taken from this row. On this row, under the column headed "**30 YRS OLD**," the "Table Rent" is \$312.

The base rental value of \$312 (computed above) includes the value of one full bathroom. Since the unit in this example has only a 3/4 bathroom, an adjustment must be made for the missing 1/4 bathroom. At the top of the table is a column titled "**PER EXTRA BATHROOM**." Follow this column down to the 700 SQFT row. A value of \$45 is shown. Multiply this value times .25 (1/4 bathroom) to calculate the value of the missing 1/4 bathroom ($\$45 \times .25 = \11.25). Subtract \$11.25 from the rent.

The second and third adjustments are for the condition of the unit. Follow the 700 SQFT row to the column headed "**POOR EXTERIOR/INTERIOR***"; subtract \$25 for the poor exterior condition and another \$25 for the poor interior condition.

The final adjustment is the community adjustment. The mobile home in this example is located near Douglas, AZ. The notes beneath the table (see "**COMMUNITY ADJUSTMENTS**") show an adjustment of -\$129 for Douglas, AZ. The rental values for mobile homes in Douglas, AZ are much lower than the survey area average. The rent for mobile homes which use Douglas, AZ as the nearest established community should be reduced by \$129.

The Monthly Base Rental Rate for this mobile home is shown below.

Table Rent (700 SQFT/30 years old)	\$312.00
Bathroom Adjustment (.25 X \$45)	-11.25
Poor Exterior	- 25.00
Poor Interior	- 25.00
Location Adjustment (Douglas, AZ)	<u>-129.00</u>
Computed Monthly Base Rental Rate	\$121.75
 Computed Monthly Base Rental Rate (Rounded)	 \$122.00
Actual Monthly Base Rental Rate (Minimum Base)	\$170.00

Note: In this example, the Monthly Base Rental Rate computes to \$122.00, which is less than the \$170.00 minimum Monthly Base Rental Rate for the Arizona/Nevada Survey Region (refer to the footnotes on each rent table for the minimum base rent). Therefore, the Monthly Base Rental Rate for the mobile home in this example will be set at \$170.00. Keep in mind that the *Monthly Base Rental Rate* is different from the minimum monthly *final rent*. Thus, \$170.00 is not the minimum final rent possible.

The minimum base rent is set slightly higher than the average trailer pad rent for the region. The reasoning being that the base rent for a house, apartment, or mobile home should always be higher than a bare piece of ground.

TABLE 5a MONTHLY BASE RENT - GOOD CONDITION 3 BDR, 1 BATH, MOB HM

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION, 3 BEDROOM, 1 BATHROOM MOBILE HOMES

SQFT	5 YRS OLD	10 YRS OLD	15 YRS OLD	20 YRS OLD	25 YRS OLD	30 YRS OLD	35+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER- IOR/ INTER- IOR*	FAIR EXTER- IOR/ INTER- IOR*	POOR EXTER- IOR/ INTER- IOR*
400	\$337	\$326	\$315	\$304	\$292	\$281	\$270	\$+45	\$+15	\$-5	\$-25
500	\$360	\$349	\$338	\$326	\$315	\$304	\$293	\$+45	\$+15	\$-6	\$-25
600	\$380	\$369	\$357	\$346	\$335	\$324	\$312	\$+45	\$+15	\$-7	\$-25
700	\$398	\$386	\$375	\$364	\$353	\$341	\$330	\$+45	\$+15	\$-8	\$-25
800	\$414	\$403	\$391	\$380	\$369	\$358	\$346	\$+45	\$+15	\$-10	\$-25
900	\$429	\$418	\$406	\$395	\$384	\$373	\$361	\$+45	\$+15	\$-11	\$-25
1000	\$443	\$432	\$420	\$409	\$398	\$387	\$375	\$+45	\$+15	\$-12	\$-25
1100	\$456	\$445	\$434	\$423	\$411	\$400	\$389	\$+45	\$+15	\$-13	\$-25
1200	\$469	\$458	\$447	\$435	\$424	\$413	\$402	\$+45	\$+15	\$-14	\$-25
1300	\$481	\$470	\$459	\$447	\$436	\$425	\$414	\$+45	\$+15	\$-16	\$-25
1400	\$493	\$482	\$471	\$459	\$448	\$437	\$426	\$+45	\$+15	\$-17	\$-25
1500	\$504	\$493	\$482	\$471	\$459	\$448	\$437	\$+45	\$+15	\$-18	\$-25
1600	\$516	\$504	\$493	\$482	\$471	\$459	\$448	\$+45	\$+15	\$-19	\$-25

STRUCTURAL ADJUSTMENTS:

GARAGE (ANY SIZE):	ADD	\$30
CARPORT (ANY SIZE):	ADD	\$20
CENTRAL REFRIGERATED AIR CONDITIONING	ADD	\$35
CENTRAL EVAPORATIVE AIR CONDITIONING	ADD	\$25

COMMUNITY ADJUSTMENTS:

DOUGLAS, AZ.	-\$129;	GLOBE, AZ.	-\$20;	HOLBROOK, AZ.	-\$120;	KINGMAN, AZ.	-\$77;
PARKER, AZ.	-\$83;	SAFFORD, AZ.	-\$61;	SHOW LOW, AZ.	-\$33;	SPRINGERVILLE, AZ.	-\$101;
WILLCOX, AZ.	-\$45;	WILLIAMS, AZ.	-\$15;	WINSLOW, AZ.	-\$73;	ALTURAS, CA.	-\$77;
LONE PINE, CA.	-\$57;	BATTLE MOUNTAIN, NV	-\$101;	CARSON CITY, NV.	-\$46;	ELY, NV.	-\$59;
HENDERSON, NV.	-\$55;	KLAMATH FALLS, OR.	-\$28;	LAKEVIEW, OR.	-\$60;		

* - IF BOTH THE EXTERIOR AND INTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

TABLE 5b MONTHLY BASE RENT - GOOD CONDITION 2 BDR, 1 BATH, MOB HM

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION, 2 BEDROOM, 1 BATHROOM MOBILE HOMES

SQFT	5 YRS OLD	10 YRS OLD	15 YRS OLD	20 YRS OLD	25 YRS OLD	30 YRS OLD	35+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER- IOR/ INTER- IOR*	FAIR EXTER- IOR/ INTER- IOR*	POOR EXTER- IOR/ INTER- IOR*
400	\$329	\$318	\$306	\$295	\$284	\$273	\$261	\$+45	\$+15	\$-5	\$-25
500	\$350	\$338	\$327	\$316	\$305	\$293	\$282	\$+45	\$+15	\$-6	\$-25
600	\$367	\$356	\$345	\$334	\$322	\$311	\$300	\$+45	\$+15	\$-7	\$-25
700	\$383	\$372	\$360	\$349	\$338	\$327	\$315	\$+45	\$+15	\$-8	\$-25
800	\$397	\$386	\$375	\$363	\$352	\$341	\$330	\$+45	\$+15	\$-10	\$-25
900	\$410	\$399	\$387	\$376	\$365	\$354	\$342	\$+45	\$+15	\$-11	\$-25
1000	\$422	\$411	\$399	\$388	\$377	\$366	\$354	\$+45	\$+15	\$-12	\$-25
1100	\$433	\$422	\$411	\$399	\$388	\$377	\$366	\$+45	\$+15	\$-13	\$-25
1200	\$444	\$433	\$421	\$410	\$399	\$388	\$376	\$+45	\$+15	\$-14	\$-25
1300	\$454	\$443	\$431	\$420	\$409	\$398	\$386	\$+45	\$+15	\$-16	\$-25
1400	\$464	\$452	\$441	\$430	\$419	\$407	\$396	\$+45	\$+15	\$-17	\$-25
1500	\$473	\$462	\$450	\$439	\$428	\$417	\$405	\$+45	\$+15	\$-18	\$-25

STRUCTURAL ADJUSTMENTS:

GARAGE (ANY SIZE):	ADD	\$30
CARPORT (ANY SIZE):	ADD	\$20
CENTRAL REFRIGERATED AIR CONDITIONING	ADD	\$35
CENTRAL EVAPORATIVE AIR CONDITIONING	ADD	\$25

COMMUNITY ADJUSTMENTS:

DOUGLAS, AZ.	-\$129;	GLOBE, AZ.	-\$20;	HOLBROOK, AZ.	-\$120;	KINGMAN, AZ.	-\$77;
PARKER, AZ.	-\$83;	SAFFORD, AZ.	-\$61;	SHOW LOW, AZ.	-\$33;	SPRINGERVILLE, AZ.	-\$101;
WILLCOX, AZ.	-\$45;	WILLIAMS, AZ.	-\$15;	WINSLOW, AZ.	-\$73;	ALTURAS, CA.	-\$77;
LONE PINE, CA.	-\$57;	BATTLE MOUNTAIN, NV	-\$101;	CARSON CITY, NV.	-\$46;	ELY, NV.	-\$59;
HENDERSON, NV.	-\$55;	KLAMATH FALLS, OR.	-\$28;	LAKEVIEW, OR.	-\$60;		

* - IF BOTH THE EXTERIOR AND INTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

TABLE 5c MONTHLY BASE RENT - GOOD CONDITION 1 BDR, 1 BATH, MOB HM

THE ARIZONA/NEVADA QUARTERS MONTHLY BASE RENT CHART
FOR GOOD CONDITION, 1 BEDROOM, 1 BATHROOM MOBILE HOMES

SQFT	5 YRS OLD	10 YRS OLD	15 YRS OLD	20 YRS OLD	25 YRS OLD	30 YRS OLD	35+ YRS OLD	PER EXTRA BATH ROOM	EXCEL EXTER- IOR/ INTER- IOR*	FAIR EXTER- IOR/ INTER- IOR*	POOR EXTER- IOR/ INTER- IOR*
100	\$212	\$200	\$189	\$178	\$167	\$155	\$144	\$+45	\$+15	\$-5	\$-25
200	\$265	\$254	\$243	\$231	\$220	\$209	\$198	\$+45	\$+15	\$-5	\$-25
300	\$297	\$286	\$275	\$263	\$252	\$241	\$230	\$+45	\$+15	\$-5	\$-25
400	\$321	\$309	\$298	\$287	\$276	\$264	\$253	\$+45	\$+15	\$-5	\$-25
500	\$339	\$328	\$317	\$305	\$294	\$283	\$272	\$+45	\$+15	\$-6	\$-25
600	\$355	\$343	\$332	\$321	\$310	\$298	\$287	\$+45	\$+15	\$-7	\$-25
700	\$368	\$357	\$346	\$334	\$323	\$312	\$301	\$+45	\$+15	\$-8	\$-25
800	\$380	\$369	\$358	\$346	\$335	\$324	\$313	\$+45	\$+15	\$-10	\$-25
900	\$391	\$380	\$369	\$357	\$346	\$335	\$324	\$+45	\$+15	\$-11	\$-25
1000	\$401	\$390	\$378	\$367	\$356	\$345	\$333	\$+45	\$+15	\$-12	\$-25
1100	\$410	\$399	\$388	\$376	\$365	\$354	\$343	\$+45	\$+15	\$-13	\$-25
1200	\$419	\$407	\$396	\$385	\$374	\$362	\$351	\$+45	\$+15	\$-14	\$-25

STRUCTURAL ADJUSTMENTS:

GARAGE (ANY SIZE):	ADD	\$30
CARPORT (ANY SIZE):	ADD	\$20
CENTRAL REFRIGERATED AIR CONDITIONING	ADD	\$35
CENTRAL EVAPORATIVE AIR CONDITIONING	ADD	\$25

COMMUNITY ADJUSTMENTS:

DOUGLAS, AZ.	-\$129;	GLOBE, AZ.	-\$20;	HOLBROOK, AZ.	-\$120;	KINGMAN, AZ.	-\$77;
PARKER, AZ.	-\$83;	SAFFORD, AZ.	-\$61;	SHOW LOW, AZ.	-\$33;	SPRINGERVILLE, AZ.	-\$101;
WILLCOX, AZ.	-\$45;	WILLIAMS, AZ.	-\$15;	WINSLOW, AZ.	-\$73;	ALTURAS, CA.	-\$77;
LONE PINE, CA.	-\$57;	BATTLE MOUNTAIN, NV	-\$101;	CARSON CITY, NV.	-\$46;	ELY, NV.	-\$59;
HENDERSON, NV.	-\$55;	KLAMATH FALLS, OR.	-\$28;	LAKEVIEW, OR.	-\$60;		

* - IF BOTH THE EXTERIOR AND INTERIOR ARE IN THIS CONDITION, APPLY THIS FACTOR TWICE.

REGARDLESS OF ADJUSTMENTS, THE MINIMUM BASE RENT IS \$170 PER MONTH.

THE APPROPRIATE CPI FACTOR SHOULD BE APPLIED AFTER COMPLETING THE ABOVE ADJUSTMENTS.

E. CABINS OR LOOKOUTS

For purposes of rental rate establishment, the rental housing class most comparable to cabins or lookouts would be 1-bedroom, single-family houses, regardless of the number of bedrooms in the cabin.

One-bedroom, single-family rental houses generally consist of smaller and older housing units.

Where the cabins or lookouts are outfitted for housekeeping, and contain an independent primary heating system, the rental rates (including all applicable adjustments) are determined by using the 1-bedroom house chart (i.e. Table 3d).

Where a cabin or lookout lacks full housekeeping facilities (including running water, an inside heated bathroom, or a central heating system), additional adjustments (shown below) must be made to the Monthly Base Rental Rate. A free standing stove without a fan, or a fireplace does not qualify as a central primary heating system. These adjustments are designed to take into consideration the inconvenience resulting from the lack of full housekeeping facilities. However, the adjusted monthly base rental rate may not be set below the minimum monthly base rent of \$170.

. No Electricity =	- 20%
. No Inside Bathroom =	- 20%
. No Running Water =	- 20%
. No Central Heating System =	- 15% (*)
. Less Than Two Rooms (One-Room Cabin or Lookout) =	- 10%

(*) Applied only if used during the heating season.

F. BUNKHOUSE AND DORMITORIES

Bunkhouses and dormitories should only include housing units that have been specifically constructed or modified for use as bunkhouses or dormitories. Single-family houses, apartments or mobile homes that are **used** as dormitories or bunkhouses, must be valued as what they are (houses, apartments or mobile homes), with the rent divided by the number of **planned** occupants (normally 2 per bedroom).

Dormitory or bunkhouse units typically lack either a living room or kitchen, or have common baths and kitchens serving many people. Many also have multiple bunk beds in large ward-like rooms. Such housing units pose a valuation problem, as they are normally found only in association with institutions such as the military or colleges, of which its occupants are members. Since these institutions do not typically rent to the public at large, one cannot obtain an arms-length market rent.

Under circumstances where there is a lack of comparable rental data, OMB Circular A-45 provides that rental rates may be established using an extension of the Principle of Comparability. Under this procedure, rental rates are established using the most comparable rental housing available, and the rate is essentially 50 percent of the average house rent.

During the February, 1994 National Quarters Conference, the National Quarters Council decided that one aggregate monthly rate should be established for **all** dormitories in a survey region. This aggregate dormitory rate, which includes the value of Government-provided utilities, furnishings and services, was determined as follows.

An analysis of the comparables used in this survey found that the average single-family house had 1,161 square feet of finished floor space, 2.6 bedrooms and an average monthly adjusted contract rent of \$609. By applying an extension of the Principle of Comparability, the Base Shelter Rental Rate (BSRR) for bunkhouses and dormitories is calculated as shown below.

$$\text{Average adjusted contract rent} \times .5 = \$609 \times .5 = \$305.00$$

$$\$305.00 / (\text{average \# of bedrooms} \times 2 \text{ occupants per bedroom})$$

$$\$305.00 / (2.6 \text{ bedrooms} \times 2 \text{ occupants}) = \$305.00 / 5.2 = \$58.65 \text{ per month/per occupant.}$$

Charges were then added to this rate for utilities, services and furnishings that are provided by the Government. The aggregate value of these items was based on a study of the rates prevailing in the regional survey area. These charges were prorated based upon a 1,161 square foot, 2.6 bedroom, single-family house occupied by 2 people per bedroom. The aggregate charge for these related facilities is \$37.75.

Monthly, weekly, and daily bunkhouse and dormitory rates are computed as follows.

TABLE 6 BUNKHOUSE/DORMITORY RENTS

Arizona/Nevada

Monthly Charge

Dormitory Rate	\$58.65
Related Facilities Charges	<u>\$37.75</u>
MBRR	\$96.40

Bi-Weekly Charge

To convert to bi-weekly rate multiply MBRR by .4615 and round to nearest five cents	\$44.50
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Weekly Charge

To convert to weekly rate multiply MBRR by .2308 and round to nearest five cents	\$22.25
--	---------

Daily Charge

To convert to daily rate multiply MBRR by .0333 and round to nearest five cents	\$ 3.20
---	---------

Note: An administrative adjustment of -10% is permitted if 3 or more people must share a bedroom or sleeping area.

G. TRANSIENT QUARTERS

Transient quarters are those which are occupied on a transient basis, normally for a period of 90 days or less. Government provided transient quarters offer a range of accommodations. At some locations kitchen facilities, private telephones and private bathrooms may be available; at others, they are not provided. At some locations, maid service is provided (with varying degrees of frequency); at other locations, employees are "issued" bedding and other domestic items, and must take care of their own house keeping arrangements.

Given the diversity of facilities and services associated with Government-provided transient quarters, the QMIS National Quarters Council determined that private housing, comparable to Government transient quarters, generally does not exist. Accordingly, the rental charges for transient quarters have been established by extending the principle of comparability, as provided in OMB Circular A-45.

Essentially, the rental charge for transient quarters is the sum of the monthly dormitory rate (see Table 6); a monthly charge for maid service (Table 18); and a 20 percent administrative/service charge required by OMB Circular A-45 paragraph 7.c(4)(a). Monthly, weekly and daily charges for transient quarters are shown, below, in Table 7.

TABLE 7 TRANSIENT QUARTERS RENTS

Dormitory BSRR	\$58.65
Related Facilities Charges (Table 6)	37.75
Maid Service (Table 18)	<u>62.70</u>
Subtotal	\$159.10
Administrative Charge (OMB Cir. A-45)	<u>x 1.20</u>
Total (Rounded)	\$190.90
Monthly Charge (Rounded)	\$190.90
Bi-Weekly Charge (\$190.90 x .4615 Rounded)	\$88.10
Weekly Charge (\$190.90 x .2308 Rounded)	\$44.05
Daily Charge (\$190.90 x .0333 Rounded)	\$6.35

H. TRAILER SPACES

During the course of the survey, trailer pads were surveyed in a wide variety of mobile home parks and varied widely in physical characteristics, utilities, rents, and geographical location.

A simplified analysis of this data was done. The value of related facilities in the contract rent was subtracted to arrive at an adjusted rent. After excluding extreme outliers, the average adjusted rent was determined for the remaining samples.

The average adjusted rent was then divided into the actual rent of each remaining sample. Those communities where the adjusted contract rents were significantly lower than the average rent for the region were given their typical adjusted rents. The rental rates of trailer pads in all other communities were established at the survey average rental level for the region.

During the February, 1993 National Quarters Conference, the National Quarters Officers of the agencies that participate in the Quarters Management Program agreed to assess the same monthly base rental rate (the rate for a single-wide space) for **all** GFQ trailer spaces. This is because most employees do not own/occupy double-wide mobile homes, and because the market differences are negligible.

To determine the trailer pad Monthly Base Rental Rate, use the applicable rate contained in Table 8. Do not use the rates in Table 8 if the trailer pad is occupied by a Government-owned or leased mobile home, as the land rent is already included in the base rent for all improved quarters.

If, as an example, the trailer pad is occupied by a tenant-owned mobile home located near Tonopah, NV, the base rent for this pad would be \$123 per month. If, for another example, the trailer space is located near Winnemucca, NV, the base rental rate for this pad would be \$160 (the "All Other Locations" charge). No other adjustments are made for physical characteristics such as the date the trailer pad was installed, the front or square footage, or the total number of sites at that location.

However, all appropriate administrative adjustments (such as amenity and isolation adjustments), as well as all charges for Government provided related facilities (such as utilities and furnishings) should be applied to the Monthly Base Rental Rates in Table 8 to determine the monthly net rental charge.

TABLE 8 TRAILER SPACES - MONTHLY BASE RENTAL RATES

<u>COMMUNITIES</u>	<u>MONTHLY BASE RENTAL RATES</u>
ARIZONA	
Coolidge, AZ	\$150
Holbrook, AZ	\$52
Tucson, AZ	\$130
Winslow, AZ	\$96
CALIFORNIA	
Alturas, CA	\$122
Trona, CA	\$50
NEVADA	
Ely, NV	\$120
Pahrump, NV	\$158
Tonopah, NV	\$123
UTAH	
Kanab, UT	\$55
ALL OTHER LOCATIONS	\$160

I. OBSOLETE QUARTERS

OMB Circular A-45 revised October 20, 1993 excludes from the term rental quarters "... housing which due to extreme deterioration is unsuitable for occupancy except in exigent circumstances. ..." The net effect of this change means there will be no base rental rate for obsolete quarters. However, assessments will be made for utilities, furnishings, appliances and any other services that are provided by the Government.

The Department of the Interior Quarters Handbook (DQH), and the regulations of other QMIS program participants, provide that housing used as employee quarters must be safe, sanitary, and energy efficient. Where housing is in obsolete condition, it is by definition unfit for use as employee housing, and should be renovated, replaced, destroyed or used for non-residential purposes. Section 7.3A of the DQH also provides that the appropriate Program Assistant Secretary, or his/her designee (Bureau Head), may authorize temporary occupancy (for a period not to exceed one year), pending rehabilitation or replacement action where sufficient written justification is provided.

VI. CHARGES FOR UTILITIES, APPLIANCES AND RELATED SERVICES

A. BACKGROUND

OMB Circular A-45 requires that, whenever possible, utilities should be provided by a private company and billed directly to quarters occupants. Where Government-furnished utilities are provided, they should be metered or measured. When Government-furnished utilities are not metered or measured, consumption will be determined from an analysis of the average amounts of utilities used in comparable private housing in the nearest established community or survey area. **Where the Government furnishes utilities, and where the quarters rental rates are established by the regional survey method, the utility rates shall be the regional average utility rates prescribed in this report - not the rates prevailing in the nearest established community.**

The regional average utility rates contained in this report include all applicable delivery charges, adjustments, taxes and surcharges. Charges for Government-provided appliances, services and furnishings will be based upon nationwide average costs.

The following sections of this report detail the consumption and cost data to be used in the circumstances described above. The cost data in this report will be updated by the QMIS Program Office each year and distributed with the Consumer Price Index (CPI) adjustment that takes effect each year.

B. ENERGY CONSUMPTION STUDY

1. **General.** Energy consumption estimates are required where the Government furnishes the space heating or cooling fuel and the electricity, and where consumption is neither metered nor measured. In such instances, average energy consumption must be estimated and the Government must assess a charge based on private sector energy costs in the survey area.

No methodology for estimating energy consumption can exactly predict the amounts of energy needed to heat or cool specific dwellings. Precise consumption measurements are possible only when metering is used. However, the methodology used in this report will yield **reasonable** estimates of the heating and cooling energy consumption requirements of unmetered dwellings. The methodology employed in this section was contractor-developed. For this report, however, the contractor-provided tables and conversion charts have been reformatted, and the methodology has been restated to simplify the process of estimating energy consumption requirements. The unit costs for various fuel types and for electricity (e.g., the cost per gallon for fuel oil and propane; the cost per MCF (1,000 cubic feet) for natural gas; and the cost per KWH for electricity) are regional averages of the unit fuel/electricity prices gathered by the contractor in each community surveyed.

2. **Housing Prototypes.** For the Arizona/Nevada energy study, estimates of the heating and cooling energy requirements were prepared for each of the following six prototypical housing units.

Type I - Single family, one story, no basement

Type II - Single family, one story, full basement

Type III - Single family, two story, no basement

Type IV - Single family, two story, full basement

Type V - Apartment unit

Type VI - Mobile Home

3. **Assumptions.** For each of the housing prototypes, the following assumptions were made:

a. Location. - The housing is located in Globe, AZ.

b. R values. - Each housing type has the R values of insulation in floors, walls, and ceilings recommended in the HUD Minimum Property Standards (HUD-MPS) for the Globe, AZ area.

c. Occupants. - The housing contains an average compliment of occupants who are energy conscious (one person per 500 feet of floor space was assumed).

d. All measurements are of finished living space only and are based upon exterior dimensions.

e. Condition. - The housing is in good condition.

f. Building shape. - A rectangular shape with a ratio of 2:1 was established. This provides more building skin than a square configuration therefore, the rectangular shape yields a conservative estimate of skin loads.

g. Window area. - A window area of 10 percent of wall area was used to match UBC (Uniform Building Code) minimum window area standards.

h. Roof type. - A flat or pitched roof with ceiling insulation was assumed in all cases.

i. Air changes. - 1.5 air changes per hour was established as representing a conservative estimate of air changes in residential applications.

j. Perimeter loss. - Approximately 10 percent of overall building load is attributed to the slab on grade floors with rigid insulation to a value of R-6.

4. Using the above assumptions, infiltration factors developed by the Department of Energy, R values, building dimensions, and cooling and heating degree days, a contractor has formulated methodologies for estimating British Thermal Unit (BTU) and kilowatt hour (KWH) consumption rates, and costs, for heating and cooling. The relevant portions of the methodology is explained below.

C. SPACE HEATING (FOSSIL FUEL) CONSUMPTION/COST CALCULATIONS

To illustrate the procedure for calculating the cost of heating with fossil fuel, a single story 1,850 square foot house, with no basement, located near Prescott Valley, AZ will be used as an example.

1. The first step is to select from among Tables 9a through 9f, the table which most closely describes the quarters unit at issue. In this case, Table 9a is for a 1-story, single family house with a partial (50 percent or less) or no basement (Prototype I). When determining the prototype, use the total basement (finished and unfinished) square footage. Unfinished space is only considered when determining the prototype. It is never used when using a rent setting or consumption chart. Table 9a should be selected in this example.

2. The second step is to determine the number of BTU's consumed **annually** for heating the house used in this example. Select from Table 9a the annual MBTU (million BTU's) consumption appropriate for the heating degree days (HDD's) and the gross **finished** square footage of the house in this example. Use the table as shown below.

a. Find the number of HDD's for the established community near which the quarters is located. Table 10 contains the HDD's for the nearest established communities in the Arizona/Nevada survey region; this table shows that Prescott Valley, AZ has 4,949 HDD's. In Table 9a, 4,949 HDD's lies between the columns headed "**4,800**" and "**5,150**." Round 4,949 HDD's down to 4,800 HDD's.

b. In Table 9a, 1,850 square feet (the size of the house used in the example) lies between 1,800 and 2,000 square feet; round 1,850 down to 1,800 square feet.

c. From Table 9a (1,800 square feet and 4,800 HDD's) the annual MBTU consumption rate is 67.5 MBTU's.

3. The third step is to calculate the amount of fossil fuel needed to produce 67.5 MBTU's. Table 11 shows the amount of fossil fuel needed to produce 1 MBTU. The total amount of heating fuel required to produce 67.5 MBTU's is computed by multiplying the appropriate fuel factor in Table 11 by the number of MBTU's. In this case the fuel required is:

Natural gas:	67.5 MBTU's x 1 MCF	= 67.5 MCF.
Propane:	67.5 MBTU's x 10.2 gallons	= 688.50 gallons
Fuel oil:	67.5 MBTU's x 7.04 gallons	= 475.20 gallons

4. The fourth step is to calculate the annual cost of the fuel consumed. This can be done by multiplying the annual fuel consumption by the unit fuel charges shown in Table 12. Following this procedure, the charge for fuel consumed annually to produce 67.5 MBTU's is:

Natural gas:	67.5 MCF x \$7.11 (per MCF)	= \$479.93
Propane:	688.50 gallons x \$1.34 (per gallon)	= \$922.59
Fuel oil:	475.20 gallons x \$1.16 (per gallon)	= \$551.23

5. The fifth step is to calculate the monthly charge for fossil heating fuel. This is done simply by dividing the annual charges (above) by 12 (months). In this manner the monthly charges are: natural gas = \$39.99; propane = \$76.88 and fuel oil = \$45.94.

6. The final step is to multiply the monthly charge (computed in step 5 above) by the appropriate HUD MPS Heating Zone conversion factor (Table 13). In order to use Table 13, it is first necessary to determine the HUD MPS Zone for the community at issue (Prescott Valley, AZ). Table 10 shows the HUD MPS Zones for the nearest established communities located within the Arizona/Nevada survey region. From Table 10, it can be seen that Prescott Valley, AZ is in MPS Zone 4. The conversion factor can now be found in Table 13. The conversion factor for a single story dwelling with no basement (Prototype I) in HUD MPS Zone 4 is 1.00. Multiply the monthly charges determined in step 5 above by 1.00 (the conversion factor). In this manner, the heating fuel charge can be computed for any quarters unit in any community or location. In this example, the final monthly fossil fuel heating costs are \$39.99 (\$39.99 x 1.00) for natural gas, \$76.88 (\$76.88 x 1.00) for propane and \$45.94 (\$45.94 x 1.00) for fuel oil.

The above example pertained to a single story dwelling with a partial (50 percent or less) or no basement. When calculating the heating fuel charge for a different type of housing (including apartments and mobile homes), use the Table (9a through f) which most closely describes the quarters unit to compute the annual MBTU consumption.

TABLE 9a ANNUAL MBTU USAGE (MILLIONS BTU'S) - PROTOTYPE I
Single Family, One Story, Partial (Less Than 50%) or No Basement

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating Degree Days																
	950	1300	1650	2000	2350	2700	3050	3400	3750	4100	4450	4800	5150	5500	5850	6200	6550
100	0.7	1.0	1.3	1.6	1.8	2.1	2.4	2.7	2.9	3.2	3.5	3.7	4.0	4.3	4.6	4.8	5.1
200	1.5	2.0	2.6	3.1	3.7	4.2	4.8	5.3	5.9	6.4	7.0	7.5	8.0	8.6	9.1	9.7	10.2
400	3.0	4.1	5.2	6.2	7.3	8.4	9.5	10.6	11.7	12.8	13.9	15.0	16.1	17.2	18.3	19.4	20.5
600	4.5	6.1	7.7	9.4	11.0	12.7	14.3	15.9	17.6	19.2	20.9	22.5	24.1	25.8	27.4	29.1	30.7
800	5.9	8.1	10.3	12.5	14.7	16.9	19.1	21.2	23.4	25.6	27.8	30.0	32.2	34.4	36.5	38.7	40.9
1000	7.4	10.2	12.9	15.6	18.4	21.1	23.8	26.6	29.3	32.0	34.8	37.5	40.2	43.0	45.7	48.4	51.2
1200	8.9	12.2	15.5	18.7	22.0	25.3	28.6	31.9	35.1	38.4	41.7	45.0	48.3	51.5	54.8	58.1	61.4
1400	10.4	14.2	18.0	21.9	25.7	29.5	33.3	37.2	41.0	44.8	48.7	52.5	56.3	60.1	64.0	67.8	71.6
1600	11.9	16.2	20.6	25.0	29.4	33.7	38.1	42.5	46.9	51.2	55.6	60.0	64.4	68.7	73.1	77.5	81.8
1800	13.4	18.3	23.2	28.1	33.0	38.0	42.9	47.8	52.7	57.6	62.6	67.5	72.4	77.3	82.2	87.2	92.1
2000	14.8	20.3	25.8	31.2	36.7	42.2	47.6	53.1	58.6	64.0	69.5	75.0	80.4	85.9	91.4	96.8	102.3
2200	16.3	22.3	28.3	34.4	40.4	46.4	52.4	58.4	64.4	70.4	76.5	82.5	88.5	94.5	100.5	106.5	112.5
2400	17.8	24.4	30.9	37.5	44.0	50.6	57.2	63.7	70.3	76.8	83.4	90.0	96.5	103.1	109.6	116.2	122.8
2600	19.3	26.4	33.5	40.6	47.7	54.8	61.9	69.0	76.1	83.3	90.4	97.5	104.6	111.7	118.8	125.9	133.0
2800	20.8	28.4	36.1	43.7	51.4	59.0	66.7	74.3	82.0	89.7	97.3	105.0	112.6	120.3	127.9	135.6	143.2
3000	22.3	30.5	38.7	46.9	55.1	63.3	71.5	79.7	87.9	96.1	104.3	112.5	120.7	128.9	137.1	145.3	153.5

TABLE 9b

ANNUAL MBTU USAGE (MILLIONS BTU'S) - PROTOTYPE II

Single Family, Single Story, Full Basement

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating Degree Days																
	950	1300	1650	2000	2350	2700	3050	3400	3750	4100	4450	4800	5150	5500	5850	6200	6550
100	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.6	2.8	3.0	3.2	3.4	3.6
200	1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.8	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.8	7.2
400	2.1	2.9	3.6	4.4	5.2	6.0	6.7	7.5	8.3	9.0	9.8	10.6	11.4	12.1	12.9	13.7	14.5
600	3.1	4.3	5.5	6.6	7.8	8.9	10.1	11.3	12.4	13.6	14.7	15.9	17.1	18.2	19.4	20.5	21.7
800	4.2	5.7	7.3	8.8	10.4	11.9	13.5	15.0	16.6	18.1	19.6	21.2	22.7	24.3	25.8	27.4	28.9
1000	5.2	7.2	9.1	11.0	13.0	14.9	16.8	18.8	20.7	22.6	24.6	26.5	28.4	30.3	32.3	34.2	36.1
1200	6.3	8.6	10.9	13.2	15.6	17.9	20.2	22.5	24.8	27.1	29.5	31.8	34.1	36.4	38.7	41.1	43.4
1400	7.3	10.0	12.7	15.5	18.2	20.9	23.6	26.3	29.0	31.7	34.4	37.1	39.8	42.5	45.2	47.9	50.6
1600	8.4	11.5	14.6	17.7	20.7	23.8	26.9	30.0	33.1	36.2	39.3	42.4	45.5	48.6	51.6	54.7	57.8
1800	9.4	12.9	16.4	19.9	23.3	26.8	30.3	33.8	37.2	40.7	44.2	47.7	51.2	54.6	58.1	61.6	65.1
2000	10.5	14.3	18.2	22.1	25.9	29.8	33.7	37.5	41.4	45.2	49.1	53.0	56.8	60.7	64.6	68.4	72.3
2200	11.5	15.8	20.0	24.3	28.5	32.8	37.0	41.3	45.5	49.8	54.0	58.3	62.5	66.8	71.0	75.3	79.5
2400	12.6	17.2	21.9	26.5	31.1	35.8	40.4	45.0	49.7	54.3	58.9	63.6	68.2	72.8	77.5	82.1	86.7
2600	13.6	18.7	23.7	28.7	33.7	38.7	43.8	48.8	53.8	58.8	63.8	68.9	73.9	78.9	83.9	89.0	94.0
2800	14.7	20.1	25.5	30.9	36.3	41.7	47.1	52.5	57.9	63.3	68.8	74.2	79.6	85.0	90.4	95.8	101.2
3000	15.7	21.5	27.3	33.1	38.9	44.7	50.5	56.3	62.1	67.9	73.7	79.5	85.3	91.0	96.8	102.6	108.4

TABLE 9c ANNUAL MBTU USAGE (MILLIONS BTU'S) - PROTOTYPE III
Single Family, Two Story, Partial (Less Than 50%) or No Basement

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating Degree Days																
	950	1300	1650	2000	2350	2700	3050	3400	3750	4100	4450	4800	5150	5500	5850	6200	6550
100	0.6	0.8	1.1	1.3	1.5	1.8	2.0	2.2	2.4	2.7	2.9	3.1	3.4	3.6	3.8	4.0	4.3
200	1.2	1.7	2.1	2.6	3.1	3.5	4.0	4.4	4.9	5.3	5.8	6.2	6.7	7.2	7.6	8.1	8.5
400	2.5	3.4	4.3	5.2	6.1	7.0	7.9	8.9	9.8	10.7	11.6	12.5	13.4	14.3	15.2	16.1	17.1
600	3.7	5.1	6.4	7.8	9.2	10.5	11.9	13.3	14.6	16.0	17.4	18.7	20.1	21.5	22.8	24.2	25.6
800	4.9	6.8	8.6	10.4	12.2	14.1	15.9	17.7	19.5	21.3	23.2	25.0	26.8	28.6	30.5	32.3	34.1
1000	6.2	8.5	10.7	13.0	15.3	17.6	19.8	22.1	24.4	26.7	29.0	31.2	33.5	35.8	38.1	40.4	42.6
1200	7.4	10.2	12.9	15.6	18.4	21.1	23.8	26.6	29.3	32.0	34.8	37.5	40.2	43.0	45.7	48.4	51.2
1400	8.7	11.8	15.0	18.2	21.4	24.6	27.8	31.0	34.2	37.4	40.5	43.7	46.9	50.1	53.3	56.5	59.7
1600	9.9	13.5	17.2	20.8	24.5	28.1	31.8	35.4	39.0	42.7	46.3	50.0	53.6	57.3	60.9	64.6	68.2
1800	11.1	15.2	19.3	23.4	27.5	31.6	35.7	39.8	43.9	48.0	52.1	56.2	60.3	64.4	68.5	72.6	76.7
2000	12.4	16.9	21.5	26.0	30.6	35.1	39.7	44.3	48.8	53.4	57.9	62.5	67.0	71.6	76.1	80.7	85.3
2200	13.6	18.6	23.6	28.6	33.6	38.7	43.7	48.7	53.7	58.7	63.7	68.7	73.7	78.7	83.8	88.8	93.8
2400	14.8	20.3	25.8	31.2	36.7	42.2	47.6	53.1	58.6	64.0	69.5	75.0	80.4	85.9	91.4	96.8	102.3
2600	16.1	22.0	27.9	33.8	39.8	45.7	51.6	57.5	63.5	69.4	75.3	81.2	87.1	93.1	99.0	104.9	110.8
2800	17.3	23.7	30.1	36.4	42.8	49.2	55.6	62.0	68.3	74.7	81.1	87.5	93.8	100.2	106.6	113.0	119.4
3000	18.5	25.4	32.2	39.0	45.9	52.7	59.5	66.4	73.2	80.0	86.9	93.7	100.6	107.4	114.2	121.1	127.9

TABLE 9d ANNUAL MBTU USAGE (MILLIONS BTU'S) - PROTOTYPE IV

Single Family, Two Story, Full Basement

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating Degree Days																
	950	1300	1650	2000	2350	2700	3050	3400	3750	4100	4450	4800	5150	5500	5850	6200	6550
100	0.7	1.0	1.2	1.5	1.7	2.0	2.2	2.5	2.8	3.0	3.3	3.5	3.8	4.1	4.3	4.6	4.8
200	1.4	1.9	2.4	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.6	7.1	7.6	8.1	8.6	9.1	9.7
400	2.8	3.8	4.9	5.9	6.9	8.0	9.0	10.0	11.1	12.1	13.1	14.2	15.2	16.2	17.3	18.3	19.3
600	4.2	5.8	7.3	8.9	10.4	11.9	13.5	15.0	16.6	18.1	19.7	21.2	22.8	24.3	25.9	27.4	29.0
800	5.6	7.7	9.7	11.8	13.9	15.9	18.0	20.1	22.1	24.2	26.3	28.3	30.4	32.5	34.5	36.6	38.6
1000	7.0	9.6	12.2	14.8	17.3	19.9	22.5	25.1	27.7	30.2	32.8	35.4	38.0	40.6	43.1	45.7	48.3
1200	8.4	11.5	14.6	17.7	20.8	23.9	27.0	30.1	33.2	36.3	39.4	42.5	45.6	48.7	51.8	54.9	58.0
1400	9.8	13.4	17.0	20.7	24.3	27.9	31.5	35.1	38.7	42.3	46.0	49.6	53.2	56.8	60.4	64.0	67.6
1600	11.2	15.3	19.5	23.6	27.7	31.9	36.0	40.1	44.3	48.4	52.5	56.6	60.8	64.9	69.0	73.2	77.3
1800	12.6	17.3	21.9	26.6	31.2	35.8	40.5	45.1	49.8	54.4	59.1	63.7	68.4	73.0	77.7	82.3	87.0
2000	14.0	19.2	24.3	29.5	34.7	39.8	45.0	50.2	55.3	60.5	65.6	70.8	76.0	81.1	86.3	91.5	96.6
2200	15.4	21.1	26.8	32.5	38.1	43.8	49.5	55.2	60.9	66.5	72.2	77.9	83.6	89.2	94.9	100.6	106.3
2400	16.8	23.0	29.2	35.4	41.6	47.8	54.0	60.2	66.4	72.6	78.8	85.0	91.2	97.4	103.6	109.8	115.9
2600	18.2	24.9	31.6	38.4	45.1	51.8	58.5	65.2	71.9	78.6	85.3	92.1	98.8	105.5	112.2	118.9	125.6
2800	19.6	26.8	34.1	41.3	48.5	55.8	63.0	70.2	77.4	84.7	91.9	99.1	106.4	113.6	120.8	128.0	135.3
3000	21.0	28.8	36.5	44.3	52.0	59.7	67.5	75.2	83.0	90.7	98.5	106.2	114.0	121.7	129.4	137.2	144.9

TABLE 9e

ANNUAL MBTU USAGE (MILLIONS BTU'S) - PROTOTYPE V

Apartments

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating Degree Days																
	950	1300	1650	2000	2350	2700	3050	3400	3750	4100	4450	4800	5150	5500	5850	6200	6550
100	0.4	0.5	0.7	0.8	1.0	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.5	2.7
200	0.8	1.1	1.4	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.6	3.9	4.2	4.5	4.8	5.1	5.4
400	1.6	2.1	2.7	3.3	3.8	4.4	5.0	5.6	6.1	6.7	7.3	7.9	8.4	9.0	9.6	10.2	10.7
600	2.3	3.2	4.1	4.9	5.8	6.6	7.5	8.4	9.2	10.1	10.9	11.8	12.7	13.5	14.4	15.2	16.1
800	3.1	4.3	5.4	6.6	7.7	8.8	10.0	11.1	12.3	13.4	14.6	15.7	16.9	18.0	19.2	20.3	21.5
1000	3.9	5.3	6.8	8.2	9.6	11.1	12.5	13.9	15.4	16.8	18.2	19.7	21.1	22.5	23.9	25.4	26.8
1200	4.7	6.4	8.1	9.8	11.5	13.3	15.0	16.7	18.4	20.1	21.9	23.6	25.3	27.0	28.7	30.5	32.2
1400	5.4	7.5	9.5	11.5	13.5	15.5	17.5	19.5	21.5	23.5	25.5	27.5	29.5	31.5	33.5	35.5	37.5
1600	6.2	8.5	10.8	13.1	15.4	17.7	20.0	22.3	24.6	26.9	29.1	31.4	33.7	36.0	38.3	40.6	42.9
1800	7.0	9.6	12.2	14.7	17.3	19.9	22.5	25.1	27.6	30.2	32.8	35.4	38.0	40.5	43.1	45.7	48.3
2000	7.8	10.6	13.5	16.4	19.2	22.1	25.0	27.8	30.7	33.6	36.4	39.3	42.2	45.0	47.9	50.8	53.6
2200	8.6	11.7	14.9	18.0	21.2	24.3	27.5	30.6	33.8	36.9	40.1	43.2	46.4	49.5	52.7	55.8	59.0
2400	9.3	12.8	16.2	19.7	23.1	26.5	30.0	33.4	36.8	40.3	43.7	47.2	50.6	54.0	57.5	60.9	64.4
2600	10.1	13.8	17.6	21.3	25.0	28.7	32.5	36.2	39.9	43.6	47.4	51.1	54.8	58.5	62.3	66.0	69.7
2800	10.9	14.9	18.9	22.9	26.9	31.0	35.0	39.0	43.0	47.0	51.0	55.0	59.0	63.0	67.1	71.1	75.1
3000	11.7	16.0	20.3	24.6	28.9	33.2	37.5	41.8	46.1	50.4	54.7	59.0	63.3	67.6	71.8	76.1	80.4

TABLE 9f ANNUAL MBTU USAGE (MILLIONS BTU'S) - PROTOTYPE VI

Mobile Homes

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating Degree Days																
	950	1300	1650	2000	2350	2700	3050	3400	3750	4100	4450	4800	5150	5500	5850	6200	6550
100	1.2	1.6	2.0	2.5	2.9	3.3	3.8	4.2	4.6	5.1	5.5	5.9	6.4	6.8	7.2	7.7	8.1
200	2.4	3.2	4.1	5.0	5.8	6.7	7.6	8.4	9.3	10.2	11.0	11.9	12.8	13.6	14.5	15.4	16.2
400	4.7	6.4	8.2	9.9	11.6	13.4	15.1	16.8	18.6	20.3	22.0	23.8	25.5	27.2	29.0	30.7	32.4
600	7.1	9.7	12.3	14.9	17.5	20.1	22.7	25.3	27.9	30.5	33.1	35.7	38.3	40.9	43.5	46.1	48.7
800	9.4	12.9	16.3	19.8	23.3	26.7	30.2	33.7	37.1	40.6	44.1	47.5	51.0	54.5	57.9	61.4	64.9
1000	11.8	16.1	20.4	24.8	29.1	33.4	37.8	42.1	46.4	50.8	55.1	59.4	63.8	68.1	72.4	76.8	81.1
1200	14.1	19.3	24.5	29.7	34.9	40.1	45.3	50.5	55.7	60.9	66.1	71.3	76.5	81.7	86.9	92.1	97.3
1400	16.5	22.5	28.6	34.7	40.7	46.8	52.9	58.9	65.0	71.1	77.1	83.2	89.3	95.3	101.4	107.5	113.5
1600	18.8	25.8	32.7	39.6	46.6	53.5	60.4	67.4	74.3	81.2	88.2	95.1	102.0	109.0	115.9	122.8	129.8
1800	21.2	29.0	36.8	44.6	52.4	60.2	68.0	75.8	83.6	91.4	99.2	107.0	114.8	122.6	130.4	138.2	146.0
2000	23.5	32.2	40.9	49.5	58.2	66.9	75.5	84.2	92.9	101.5	110.2	118.9	127.5	136.2	144.9	153.5	162.2
2200	25.9	35.4	44.9	54.5	64.0	73.5	83.1	92.6	102.2	111.7	121.2	130.8	140.3	149.8	159.4	168.9	178.4
2400	28.2	38.6	49.0	59.4	69.8	80.2	90.6	101.0	111.4	121.8	132.2	142.6	153.0	163.4	173.8	184.2	194.6
2600	30.6	41.9	53.1	64.4	75.7	86.9	98.2	109.5	120.7	132.0	143.3	154.5	165.8	177.1	188.3	199.6	210.9
2800	32.9	45.1	57.2	69.3	81.5	93.6	105.7	117.9	130.0	142.1	154.3	166.4	178.6	190.7	202.8	215.0	227.1
3000	35.3	48.3	61.3	74.3	87.3	100.3	113.3	126.3	139.3	152.3	165.3	178.3	191.3	204.3	217.3	230.3	243.3

TABLE 10 HEATING/COOLING DEGREE DAYS AND MPS ZONES

<u>Community</u>	<u>Heating Degree Days</u>	<u>Cooling Degree Days</u>	<u>HUD MPS Zone</u>
ARIZONA			
Ajo, AZ	1,352	3,775	2
Bullhead City, AZ	1,315	4,590	3
Camp Verde, AZ	4,347	842	3
Casa Grande, AZ	1,590	3,300	2
Chandler, AZ	1,527	3,702	3
Chino Valley, AZ	4,600	816	4
Coolidge, AZ	1,590	3,300	2
Cottonwood, AZ	3,634	1,384	4
Douglas, AZ	2,796	1,565	2
Flagstaff, AZ	7,254	127	7
Gila Bend, AZ	1,301	4,043	3
Globe, AZ	3,290	1,726	3
Green Valley, AZ	1,474	2,571	2
Holbrook, AZ	4,987	1,013	6
Kingman, AZ	3,119	1,930	3
Mesa, AZ	1,598	3,296	2
Montezuma Castle, AZ	3,141	1,788	3
Nogales, AZ	2,911	1,285	2
Parker, AZ	1,291	4,133	2
Payson, AZ	4,347	842	3
Phoenix, AZ	1,442	3,296	2
Pinetop, AZ	5,320	176	6
Prescott, AZ	4,949	606	4
Prescott Valley, AZ	4,949	606	4
Safford, AZ	2,827	1,951	3
Sedona, AZ	3,427	1,592	4
Show Low, AZ	5,320	176	6
Sierra Vista, AZ	2,820	1,437	2
Springerville, AZ	6,337	176	6
Tombstone, AZ	2,346	1,851	2
Tucson, AZ	1,474	2,571	2
Willcox, AZ	3,454	1,388	2
Williams, AZ	5,892	300	7
Winslow, AZ	4,839	1,187	6

<u>Community</u>	<u>Heating Degree Days</u>	<u>Cooling Degree Days</u>	<u>HUD MPS Zone</u>
ARIZONA			
Yuma, AZ	983	4,244	2
CALIFORNIA			
Alturas, CA	6,896	202	7
Barstow, CA	2,580	2,239	2
Bishop, CA	4,288	1,045	4
Boron, CA	2,580	2,239	2
Calipatria, CA	1,205	3,695	2
Death Valley, CA	1,148	5,467	2
Indio, CA	1,059	4,096	2
Lone Pine, CA	3,700	1,525	3
Mammoth Lakes, CA	4,288	1,045	6
Needles, CA	1,390	4,270	2
Ridgecrest, CA	2,772	2,181	2
Trona, CA	2,415	2,893	2
29 Palms, CA	1,975	2,969	2
Yucca Valley, CA	1,975	2,969	2
IDAHO			
Twin Falls, ID	6,584	433	8
NEVADA			
Battle Mountain, NV	6,420	519	7
Boulder City, NV	2,291	3,002	3
Caliente, NV	5,097	901	6
Carson City, NV	5,766	373	7
Elko, NV	7,248	406	8
Ely, NV	7,700	192	8
Fallon, NV	5,524	646	7
Gardnerville, NV	6,197	303	7
Henderson, NV	2,291	3,002	3
Pahrump, NV	2,532	3,029	3
Reno, NV	6,030	357	8
Tonopah, NV	5,753	676	6
Winnemucca, NV	6,409	505	7

<u>Community</u>	<u>Heating Degree Days</u>	<u>Cooling Degree Days</u>	<u>HUD MPS Zone</u>
OREGON			
Klamath Falls, OR	6,582	312	7
Lakeview, OR	7,035	262	8
UTAH			
Cedar City, UT	5,991	679	7
Kanab, UT	4,703	938	7

TABLE 11 FUEL REQUIRED TO PRODUCE 1 MBTU

<u>Type of Fuel</u>	<u>Amount Needed To Produce 1 MBTU</u>
Natural Gas	1 MCF (1,000 cu. ft.)
Propane	10.2 Gallons
Fuel Oil	7.04 Gallons

TABLE 12 HEATING FUEL COST

<u>Type of Fuel</u>	<u>Charge per unit</u>
Natural Gas	\$7.11
Propane	\$1.34
Fuel Oil #2	\$1.16

TABLE 13 MPS HEATING ZONE CONVERSION FACTORS

HUD MPS Heating <u>Zone</u>	Dwelling Prototypes					
	I	II	III	IV	V	VI
	<u>Single</u> <u>Story No</u> <u>Basement</u>	<u>Single</u> <u>Story Full</u> <u>Basement</u>	<u>Double</u> <u>Story No</u> <u>Basement</u>	<u>Double</u> <u>Story Full</u> <u>Basement</u>	<u>Apart-</u> <u>ments</u>	<u>Mobile</u> <u>Homes</u>
1						
2	1.00	1.00	1.00	1.00	1.00	1.00
3	1.00	1.00	1.00	1.00	1.00	1.00
4	1.00	1.00	1.00	1.00	1.00	1.00
5	1.00	1.00	1.00	1.00	1.00	1.00
6	1.13	1.18	1.15	1.13	1.24	1.14
7	1.10	1.14	1.12	1.11	1.19	1.11
8	1.00	1.01	1.01	1.00	1.01	1.00

D. SPACE HEATING (ELECTRICITY) CONSUMPTION/COST CALCULATIONS

The procedure for calculating electrical consumption and costs for space heating (where electricity is unmetered or otherwise unmeasured) is similar to the procedure used for fossil fuels. Tables 14a through 14f are used.

1. Select from these tables the dwelling prototype most similar to the quarters at issue.
2. Determine the annual kilowatt hour (KWH) consumption by finding the appropriate columns for square feet and HDD (heating degree days). Note: HDD's for the nearest established communities may be found in Table 10.
3. Divide the annual KWH by 12 to determine the monthly average electrical consumption.
4. Adjust for HUD MPS Heating Zone, using the conversion factors in Table 13.
5. Adjust for heat pump (if applicable).
6. Determine the appropriate charge per KWH from the table below. **Do not calculate the total cost of electricity in steps such as the first 500 KWH costs so much, then the second 500 KWH costs so much etc.**

<u>KWH Consumed Per Month</u>	<u>Charge per KWH</u>
1 -500	\$.087
501 - 1,000	\$.079
1,001 -1,500	\$.076
Over - 1,500	\$.075

7. Compute the monthly charge for space heating by multiplying the appropriate charge per KWH times the number of KWH consumed per month.
8. Example: The average monthly electric heating charge for a single family, 2,100 square foot, two story, no basement home located near Indio, CA is computed as follows:
 - a. Step 1. Select the table (table 14a through f) which most closely describes the quarters unit at issue. In this case, table 14c (single family, two story, no basement - prototype III) should be selected.
 - b. Step 2. Determine from table 14c the annual KWH consumption appropriate for the heating degree days (HDD) and the gross square footage of the house in this example. Use the table as follows:
 - (1) Find the number of heating degree days for the established community in which the quarters is located. Table 10 (which contains the HDD for established communities in the Arizona/Nevada survey

region) shows that Indio, CA has 1,059 HDD . In table 14c, the number of HDD's in Indio, CA (1,059) lies between the column headed 1,000 and the column headed 1,250. Round down to 1,000 HDD.

(2) In table 14c, 2,100 square feet (the size of the house used in this example) lies between 2,000 and 2,200 square feet. Round 2,100 down to 2,000 square feet.

(3) From table 14c (2,000 square feet and 1,000 HDD) the annual KWH consumption rate is 3,051 KWH.

c. Step 3. Calculate the monthly KWH consumption by dividing the annual KWH by 12 (months). In this instance, the monthly consumption is 254.25 KWH ($3,051 / 12 = 254.25$).

d. Step 4, HUD MPS Zone adjustment. The HUD MPS zone adjustment is made as follows:

1) Use Table 10 to find the HUD MPS zone for the community at issue. In this manner, Indio, CA is found to be in HUD MPS zone 2.

2) In Table 13, determine the adjustment factor for the appropriate dwelling type and MPS zone. The factor for housing prototype III in HUD MPS zone 2 is 1.00.

3) Multiply the monthly electric consumption (as computed in paragraph 8c, above) times the HUD MPS adjustment factor ($254.25 \times 1.00 = 254.25$ KWH per month).

e. Step 5, **Adjustment for heat pump**. The process described above is used for computing the electrical consumption for heating with a straight resistance heating system. Where a dwelling is heated with an electric heat pump, the straight resistance heating consumption (254.25 KWH in this example) should be multiplied by a factor of .75 which represents the greater efficiency of the heat pump. In this example, the monthly electric consumption for a heat pump as the heating source would be 190.69 ($254.25 \times .75 = 190.69$).

f. Step 6. The final step is to compute the monthly charge for the electricity consumed. This is done by multiplying the charge per KWH times the KWH consumed per month. The appropriate charge per KWH may be found in the table below.

<u>KWH Consumed Per Month</u>	<u>Charge per KWH</u>
1 - 500	\$.087
501 - 1,000	\$.079
1,001 - 1,500	\$.076
Over - 1,500	\$.075

In this example, the average monthly consumption (254.25 KWH) for resistance heat falls in the "1 - 500" KWH per month consumption category; the appropriate charge is \$.087 per KWH. The average monthly consumption (190.69 KWH) for a heat pump falls in the "1 - 500" KWH per month consumption category; and the appropriate unit charge is \$.087 per KWH.

Therefore, the monthly electric heating charge for the house used in this example is computed as follows:

Resistance heat: 254.25 KWH x \$.087 = \$22.12

Heatpump: 190.69 KWH x \$.087 = \$16.59

E. SPACE COOLING CONSUMPTION/COST

Space cooling costs are calculated in the same manner as for electric space heating except that CDD (Cooling Degree Day) values are used in lieu of HDD values. CDD values for the Nearest Established Communities are found in Table 10. Additionally, only Tables 14a through 14f are used in calculating cooling energy consumption. Briefly, the steps are as follows.

1. Select from Tables 14a through 14f, the table that most closely describes the quarters unit at issue.
2. Based on the size of the dwelling (square feet) and the number of CDD (from Table 10), use the appropriate Table (14a-f) to determine the annual KWH consumption.
3. Divide the annual KWH consumption by 12 (months) to determine the average number of KWH consumed per month.
4. Apply the HUD MPS Zone adjustment factor.
5. Apply the Coefficient of Performance (COP) adjustment.
6. Determine the appropriate charge per KWH from the table below.

<u>KWH Consumed</u> <u>Per Month</u>	<u>Charge per KWH</u>
1 - 500	\$.087
501 - 1,000	\$.079
1,001 - 1,500	\$.076
Over - 1,500	\$.075

7. Compute the monthly charge for space cooling by multiplying the appropriate charge per KWH times the number of KWH consumed per month.

8. Example : Compute the average monthly electric cooling charge for a 1,275 SQFT mobile home near Fallon, NV.

a. STEP 1: Table Selection. Select the table (table 14a through 14f) which most closely describes the quarters unit at issue. Table 14f (Mobile Home - prototype VI) should be selected.

b. STEP 2: Annual KWH Consumption. Determine from table 14f the annual KWH consumption appropriate for the cooling degree days (CDD) and the gross square footage of the apartment in this example. Use the table as follows:

(1) Find the number of cooling degree days for the established community closest to the quarters. Table 10 (which contains the CDD for established communities in the Arizona/Nevada survey region) shows that Fallon, NV has 646 CDD. In table 14f, 646 CDD lies between the columns headed 500 and 750. Round down to 500 CDD.

(2) In table 14f, 1,275 square feet (the size of the mobile home used in this example) lies between 1,200 and 1,400 square feet. Round down to 1,200 square feet.

(3) From table 14f (1,200 square feet and 500 CDD) the annual KWH consumption rate is 1,741 KWH.

c. STEP 3: Monthly Consumption. Calculate the monthly KWH consumption by dividing the annual KWH consumption by 12 (months). In this instance, the monthly consumption is 145.08 KWH rounded ($1,741 / 12 = 145.08$).

d. STEP 4: HUD MPS Zone Adjustment. The HUD MPS Zone adjustment is made as follows:

(1) Use Table 10 to find the HUD MPS zone for the community at issue. In this manner, Fallon, NV, is found to be in HUD MPS Zone 7.

(2) In Table 15, determine the adjustment factor for the appropriate dwelling unit type and MPS zone. The factor for housing prototype VI in HUD MPS zone 7 is 1.18.

(3) Multiply the monthly electric consumption (as computed in paragraph 8c, above) times the HUD MPS Zone adjustment factor $145.08 \times 1.18 = 171.19$ KWH per month.

e. STEP 5: Adjustment for Coefficient of Performance (COP). This adjustment accounts for the differences in the efficiencies of evaporative (swamp) and refrigerated air central cooling systems.

(1) Evaporative (swamp) cooling. For a central evaporative cooling system the adjusted KWH (computed in Step 4, above) is divided by a factor of 6.66. In this example, the monthly KWH requirement for central evaporative cooling is computed as $171.19 / 6.66 = 25.70$ KWH per month.

(2) Refrigerated air cooling. For a central refrigerated air cooling system, the adjusted KWH (computed in step 4, above) is divided by a factor of 2. In this example, the monthly KWH requirement for central refrigerated air cooling is computed as $171.19 / 2 = 85.60$ KWH per month.

f. STEP 6: Monthly Charge. The final step is to compute the monthly charge for the electricity consumed. This is done by multiplying the charge per KWH times the KWH consumed per month. The appropriate charge per KWH may be found in the table below.

<u>KWH Consumed Per Month</u>	<u>Charge per KWH</u>
1 - 500	\$.087
501 - 1,000	\$.079
1,001 - 1,500	\$.076
Over - 1,500	\$.075

In this example, the average monthly consumption (25.70 KWH) for evaporative cooling falls in the 1 to 500 KWH consumption range. And (85.60 KWH) for refrigerated cooling falls in the 1 to 500 KWH consumption range. The appropriate charge will be \$0.087 per KWH for evaporative cooling and \$.087 for refrigerated cooling.

Therefore, the monthly charges for cooling the mobile home used in this example would be computed as follows.

Evaporative cooling : $25.70 \text{ KWH} \times \$0.087 = \$2.24$

Refrigerated cooling: $85.60 \text{ KWH} \times \$0.087 = \$7.44$

9. Gas powered Central Air Conditioning Units. If the central air conditioning unit is gas operated (natural gas or propane), the charge is computed as follows:

a. Compute the KWH consumption in same manner as shown in steps 1 through 4 above (Note: the calculations through step 4 produce 171.19 KWH per month).

b. Calculate the Coefficient of Performance (COP) adjustment in step 5 above for refrigerated air conditioning; that is, divide the number of KWH in paragraph 9a, above (171.19 KWH) by the COP (2); for example $171.19 / 2 = 85.60$ KWH.

c. Convert the monthly KWH to MBTU's by dividing the KWH calculated in paragraph 9b, above by 234.4. Thus, $85.60 \text{ KWH} / 234.4 \text{ (KWH per MBTU)} = .37 \text{ MBTU's}$. [It takes 234.4 Kilowatts to generate 1 MBTU]

d. Calculate the volumes of natural gas and propane needed to produce .37 MBTU's. This is done as follows.

1) Natural Gas. For central air conditioning units that operate on natural gas, multiply the MBTU's calculated in paragraph 9c above by 1 MCF ($.37 \text{ MBTU's} \times 1 \text{ MCF} = .37 \text{ MCF}$). Thus, .37 MCF of natural gas would be required per month (annual average) to cool the dwelling in this example.

2) Propane. For central air conditioning units that operate on propane gas, multiply the MBTU's calculated in paragraph 9c above by 10.2 gallons ($.37 \text{ MBTU's} \times 10.2 \text{ gallons} = 3.77 \text{ gallons}$). Thus, 3.77 gallons of propane would be required per month (annual average) to cool the dwelling in this example.

e. Calculate the monthly charge for natural gas or propane consumed. This is done by multiplying the volume of fuel consumed by the unit cost of the fuel. These calculations are shown below.

Natural gas: $.37 \text{ MCF} \times \$7.11 \text{ per MCF} = \2.63 (rounded) per month.

Propane gas: $3.77 \text{ gallons} \times \$1.34 \text{ per gallon} = \5.05 (rounded) per month.

TABLE 14a ANNUAL KWH USAGE (ELECTRIC HEATING/COOLING) - TYPE I
Single Family, One Story, Partial (Less Than 50%) or No Basement

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating or Cooling Degree Days																
	100	300	500	750	1000	1250	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
100	18	55	92	137	183	229	275	366	458	549	641	732	824	915	1007	1098	1190
200	37	110	183	275	366	458	549	732	915	1098	1281	1464	1648	1831	2014	2197	2380
400	73	220	366	549	732	915	1098	1464	1831	2197	2563	2929	3295	3661	4027	4393	4760
600	110	330	549	824	1098	1373	1648	2197	2746	3295	3844	4393	4943	5492	6041	6590	7139
800	146	439	732	1098	1464	1831	2197	2929	3661	4393	5126	5858	6590	7322	8055	8787	9519
1000	183	549	915	1373	1831	2288	2746	3661	4576	5492	6407	7322	8238	9153	10068	10984	11899
1200	220	659	1098	1648	2197	2746	3295	4393	5492	6590	7688	8787	9885	10984	12082	13180	14279
1400	256	769	1281	1922	2563	3204	3844	5126	6407	7688	8970	10251	11533	12814	14096	15377	16658
1600	293	879	1464	2197	2929	3661	4393	5858	7322	8787	10251	11716	13180	14645	16109	17574	19038
1800	330	989	1648	2471	3295	4119	4943	6590	8238	9885	11533	13180	14828	16475	18123	19770	21418
2000	366	1098	1831	2746	3661	4576	5492	7322	9153	10984	12814	14645	16475	18306	20136	21967	23798
2200	403	1208	2014	3020	4027	5034	6041	8055	10068	12082	14096	16109	18123	20136	22150	24164	26177
2400	439	1318	2197	3295	4393	5492	6590	8787	10984	13180	15377	17574	19770	21967	24164	26360	28557
2600	476	1428	2380	3570	4760	5949	7139	9519	11899	14279	16658	19038	21418	23798	26177	28557	30937
2800	513	1538	2563	3844	5126	6407	7688	10251	12814	15377	17940	20503	23065	25628	28191	30754	33317
3000	549	1648	2746	4119	5492	6865	8238	10984	13729	16475	19221	21967	24713	27459	30205	32951	35696

TABLE 14b ANNUAL KWH USAGE (ELECTRIC HEATING/COOLING) - TYPE II

Single Family, Single Story, Full Basement

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating or Cooling Degree Days																
	100	300	500	750	1000	1250	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
100	13	39	65	97	129	162	194	259	323	388	453	517	582	647	711	776	841
200	26	78	129	194	259	323	388	517	647	776	905	1035	1164	1293	1423	1552	1681
400	52	155	259	388	517	647	776	1035	1293	1552	1811	2069	2328	2587	2845	3104	3363
600	78	233	388	582	776	970	1164	1552	1940	2328	2716	3104	3492	3880	4268	4656	5044
800	103	310	517	776	1035	1293	1552	2069	2587	3104	3622	4139	4656	5174	5691	6208	6726
1000	129	388	647	970	1293	1617	1940	2587	3234	3880	4527	5174	5820	6467	7114	7760	8407
1200	155	466	776	1164	1552	1940	2328	3104	3880	4656	5432	6208	6984	7760	8536	9313	10089
1400	181	543	905	1358	1811	2263	2716	3622	4527	5432	6338	7243	8148	9054	9959	10865	11770
1600	207	621	1035	1552	2069	2587	3104	4139	5174	6208	7243	8278	9313	10347	11382	12417	13451
1800	233	698	1164	1746	2328	2910	3492	4656	5820	6984	8148	9313	10477	11641	12805	13969	15133
2000	259	776	1293	1940	2587	3234	3880	5174	6467	7760	9054	10347	11641	12934	14227	15521	16814
2200	285	854	1423	2134	2845	3557	4268	5691	7114	8536	9959	11382	12805	14227	15650	17073	18496
2400	310	931	1552	2328	3104	3880	4656	6208	7760	9313	10865	12417	13969	15521	17073	18625	20177
2600	336	1009	1681	2522	3363	4204	5044	6726	8407	10089	11770	13451	15133	16814	18496	20177	21859
2800	362	1086	1811	2716	3622	4527	5432	7243	9054	10865	12675	14486	16297	18108	19918	21729	23540
3000	388	1164	1940	2910	3880	4850	5820	7760	9701	11641	13581	15521	17461	19401	21341	23281	25221

TABLE 14c ANNUAL KWH USAGE (ELECTRIC HEATING/COOLING) - TYPE III

Single Family, Two Story, Partial (Less Than 50%) or No Basement

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating or Cooling Degree Days																
	100	300	500	750	1000	1250	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
100	15	46	76	114	153	191	229	305	381	458	534	610	686	763	839	915	992
200	31	92	153	229	305	381	458	610	763	915	1068	1220	1373	1525	1678	1831	1983
400	61	183	305	458	610	763	915	1220	1525	1831	2136	2441	2746	3051	3356	3661	3966
600	92	275	458	686	915	1144	1373	1831	2288	2746	3204	3661	4119	4576	5034	5492	5949
800	122	366	610	915	1220	1525	1831	2441	3051	3661	4271	4882	5492	6102	6712	7322	7933
1000	153	458	763	1144	1525	1907	2288	3051	3814	4576	5339	6102	6865	7627	8390	9153	9916
1200	183	549	915	1373	1831	2288	2746	3661	4576	5492	6407	7322	8238	9153	10068	10984	11899
1400	214	641	1068	1602	2136	2670	3204	4271	5339	6407	7475	8543	9611	10678	11746	12814	13882
1600	244	732	1220	1831	2441	3051	3661	4882	6102	7322	8543	9763	10984	12204	13424	14645	15865
1800	275	824	1373	2059	2746	3432	4119	5492	6865	8238	9611	10984	12356	13729	15102	16475	17848
2000	305	915	1525	2288	3051	3814	4576	6102	7627	9153	10678	12204	13729	15255	16780	18306	19831
2200	336	1007	1678	2517	3356	4195	5034	6712	8390	10068	11746	13424	15102	16780	18458	20136	21815
2400	366	1098	1831	2746	3661	4576	5492	7322	9153	10984	12814	14645	16475	18306	20136	21967	23798
2600	397	1190	1983	2975	3966	4958	5949	7933	9916	11899	13882	15865	17848	19831	21815	23798	25781
2800	427	1281	2136	3204	4271	5339	6407	8543	10678	12814	14950	17085	19221	21357	23493	25628	27764
3000	458	1373	2288	3432	4576	5721	6865	9153	11441	13729	16018	18306	20594	22882	25171	27459	29747

TABLE 14d ANNUAL KWH USAGE (ELECTRIC HEATING/COOLING) - TYPE IV

Single Family, Two Story, Full Basement

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating or Cooling Degree Days																
	100	300	500	750	1000	1250	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
100	17	52	86	130	173	216	259	346	432	519	605	692	778	864	951	1037	1124
200	35	104	173	259	346	432	519	692	864	1037	1210	1383	1556	1729	1902	2075	2248
400	69	207	346	519	692	864	1037	1383	1729	2075	2420	2766	3112	3458	3804	4149	4495
600	104	311	519	778	1037	1297	1556	2075	2593	3112	3631	4149	4668	5187	5705	6224	6743
800	138	415	692	1037	1383	1729	2075	2766	3458	4149	4841	5532	6224	6916	7607	8299	8990
1000	173	519	864	1297	1729	2161	2593	3458	4322	5187	6051	6916	7780	8644	9509	10373	11238
1200	207	622	1037	1556	2075	2593	3112	4149	5187	6224	7261	8299	9336	10373	11411	12448	13485
1400	242	726	1210	1815	2420	3026	3631	4841	6051	7261	8472	9682	10892	12102	13312	14523	15733
1600	277	830	1383	2075	2766	3458	4149	5532	6916	8299	9682	11065	12448	13831	15214	16597	17980
1800	311	934	1556	2334	3112	3890	4668	6224	7780	9336	10892	12448	14004	15560	17116	18672	20228
2000	346	1037	1729	2593	3458	4322	5187	6916	8644	10373	12102	13831	15560	17289	19018	20747	22476
2200	380	1141	1902	2853	3804	4754	5705	7607	9509	11411	13312	15214	17116	19018	20920	22821	24723
2400	415	1245	2075	3112	4149	5187	6224	8299	10373	12448	14523	16597	18672	20747	22821	24896	26971
2600	450	1349	2248	3371	4495	5619	6743	8990	11238	13485	15733	17980	20228	22476	24723	26971	29218
2800	484	1452	2420	3631	4841	6051	7261	9682	12102	14523	16943	19364	21784	24204	26625	29045	31466
3000	519	1556	2593	3890	5187	6483	7780	10373	12967	15560	18153	20747	23340	25933	28527	31120	33713

TABLE 14e ANNUAL KWH USAGE (ELECTRIC HEATING/COOLING) - TYPE V

Apartments

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating or Cooling Degree Days																
	100	300	500	750	1000	1250	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
100	10	29	48	72	96	120	144	192	240	288	336	384	432	480	528	576	624
200	19	58	96	144	192	240	288	384	480	576	672	768	864	960	1056	1152	1248
400	38	115	192	288	384	480	576	768	960	1152	1343	1535	1727	1919	2111	2303	2495
600	58	173	288	432	576	720	864	1152	1439	1727	2015	2303	2591	2879	3167	3455	3743
800	77	230	384	576	768	960	1152	1535	1919	2303	2687	3071	3455	3838	4222	4606	4990
1000	96	288	480	720	960	1200	1439	1919	2399	2879	3359	3838	4318	4798	5278	5758	6238
1200	115	345	576	864	1152	1439	1727	2303	2879	3455	4030	4606	5182	5758	6334	6909	7485
1400	134	403	672	1008	1343	1679	2015	2687	3359	4030	4702	5374	6046	6717	7389	8061	8733
1600	154	461	768	1152	1535	1919	2303	3071	3838	4606	5374	6142	6909	7677	8445	9212	9980
1800	173	518	864	1295	1727	2159	2591	3455	4318	5182	6046	6909	7773	8637	9500	10364	11228
2000	192	576	960	1439	1919	2399	2879	3838	4798	5758	6717	7677	8637	9596	10556	11515	12475
2200	211	633	1056	1583	2111	2639	3167	4222	5278	6334	7389	8445	9500	10556	11611	12667	13723
2400	230	691	1152	1727	2303	2879	3455	4606	5758	6909	8061	9212	10364	11515	12667	13819	14970
2600	250	749	1248	1871	2495	3119	3743	4990	6238	7485	8733	9980	11228	12475	13723	14970	16218
2800	269	806	1343	2015	2687	3359	4030	5374	6717	8061	9404	10748	12091	13435	14778	16122	17465
3000	288	864	1439	2159	2879	3599	4318	5758	7197	8637	10076	11515	12955	14394	15834	17273	18713

TABLE 14f ANNUAL KWH USAGE (ELECTRIC HEATING/COOLING) - TYPE VI

Mobile Homes

BASELINE CITY, Globe, Arizona

Gross Square Feet	Heating or Cooling Degree Days																
	100	300	500	750	1000	1250	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
100	29	87	145	218	290	363	435	580	726	871	1016	1161	1306	1451	1596	1741	1887
200	58	174	290	435	580	726	871	1161	1451	1741	2032	2322	2612	2902	3193	3483	3773
400	116	348	580	871	1161	1451	1741	2322	2902	3483	4063	4644	5224	5805	6385	6966	7546
600	174	522	871	1306	1741	2177	2612	3483	4354	5224	6095	6966	7836	8707	9578	10448	11319
800	232	697	1161	1741	2322	2902	3483	4644	5805	6966	8127	9288	10448	11609	12770	13931	15092
1000	290	871	1451	2177	2902	3628	4354	5805	7256	8707	10158	11609	13061	14512	15963	17414	18865
1200	348	1045	1741	2612	3483	4354	5224	6966	8707	10448	12190	13931	15673	17414	19155	20897	22638
1400	406	1219	2032	3047	4063	5079	6095	8127	10158	12190	14221	16253	18285	20316	22348	24380	26411
1600	464	1393	2322	3483	4644	5805	6966	9288	11609	13931	16253	18575	20897	23219	25541	27863	30184
1800	522	1567	2612	3918	5224	6530	7836	10448	13061	15673	18285	20897	23509	26121	28733	31345	33957
2000	580	1741	2902	4354	5805	7256	8707	11609	14512	17414	20316	23219	26121	29023	31926	34828	37730
2200	639	1916	3193	4789	6385	7981	9578	12770	15963	19155	22348	25541	28733	31926	35118	38311	41504
2400	697	2090	3483	5224	6966	8707	10448	13931	17414	20897	24380	27863	31345	34828	38311	41794	45277
2600	755	2264	3773	5660	7546	9433	11319	15092	18865	22638	26411	30184	33957	37730	41504	45277	49050
2800	813	2438	4063	6095	8127	10158	12190	16253	20316	24380	28443	32506	36570	40633	44696	48759	52823
3000	871	2612	4354	6530	8707	10884	13061	17414	21768	26121	30475	34828	39182	43535	47889	52242	56596

TABLE 15 MPS COOLING ZONE CONVERSION FACTORS

	Dwelling Prototypes					
	I	II	III	IV	V	VI
HUD MPS Heating Zone	Single Story No Basement	Single Story Full Basement	Double Story No Basement	Double Story Full Basement	Apartments	Mobile Homes
1						
2	1.39	1.63	1.56	1.41	1.97	1.59
3	1.39	1.63	1.56	1.41	1.97	1.59
4	1.39	1.63	1.56	1.41	1.97	1.59
5	1.00	1.00	1.00	1.00	1.00	1.00
6	1.28	1.47	1.42	1.29	1.75	1.47
7	1.02	1.11	1.11	1.02	1.26	1.18
8	.95	.93	.96	.88	1.02	1.03

F. NON-SPACE HEATING/COOLING ENERGY CONSUMPTION/COST

The examples in the preceding sections (VI.C, VI.D and VI.E) dealt with the charges for space heating and cooling. However, to compute **total** energy consumption charges, the costs for energy consumed by lights, equipment, and appliances (Government **and** tenant owned) must be determined and added to the heating and cooling charges.

1. **Consumption.** Electric non-space heating/cooling consumption and cost estimates include electricity used by small appliances, lights, radios, television, refrigerators, ranges, washers, dryers, etc. These items, and their associated consumption levels, are shown in Table 16.

To use Table 16, first, determine the finished floor space square footage range within which a specific quarters unit falls. Then, using the values in Table 16, add the KWH consumed by each appliance or equipment item which is present in the quarters unit. If a housing unit has more than one (1) refrigerator, freezer, room (window) air conditioner, or space heater, multiply the KWH shown in the table times the number of refrigerators, freezers, room air conditioners, or space heaters that are present in the quarters unit to determine the total monthly KWH consumption for these appliances.

There may be instances where appliances are fueled by fossil fuels rather than by electricity. Table 16a provides monthly consumption (in MCF or gallons of fuel) for the most common of these.

If an appliance listed in Table 16 or Table 16a is not present in the quarters unit at issue, do not include its monthly energy consumption when computing the total energy consumed by equipment and appliances.

2. **Cost.** The cost of electricity or fossil fuel consumed by appliances and equipment is easily computed by multiplying the total monthly consumption (as determined in the preceding paragraphs) times the appropriate charge per KWH, MCF or gallon. These unit charges are shown in Table 17.

TABLE 16 MONTHLY KWH USAGE: APPLIANCES AND EQUIPMENT

Appliance/ Equipment	Gross Square Feet of Living Space									
	Under 301	301- 500	501- 700	701- 1,100	1,101- 1,300	1,301- 1,500	1,501- 1,900	1,901- 2,100	2,101- 2,500	Over 2,500
Hot water heater	130	130	245	245	370	370	480	480	600	705
Stove / Microwave	45	45	50	50	55	55	60	60	65	70
Refrigerator 1/	45	50	50	50	85	85	85	85	85	85
Clothes washer	20	35	35	35	45	45	45	55	55	65
Clothes dryer	15	15	25	25	35	35	35	35	40	50
Dishwasher	35	35	45	45	60	60	70	70	80	95
Freezer 1/	70	70	70	70	70	70	70	70	70	70
Furnace fan	15	15	20	20	20	25	25	30	30	35
Room air conditioner	65	65	65	65	65	65	65	65	65	65
Television / radio	5	5	10	10	20	20	20	20	25	25
Lights	50	55	75	80	90	90	95	100	120	120
Space heater (portable) 1/	130	130	130	130	130	130	130	130	130	130
Misc. small appliances	30	30	45	45	65	65	75	80	95	105
Engine Heaters	195	195	195	195	195	195	195	195	195	195
Hot Tub	360	360	360	360	360	360	360	360	360	360

1/ If more than one of these appliances are present in a quarters unit, multiply the KWH consumption times the number of appliances to determine the total KWH consumed for each appliance category.

NOTE: FOR APPLIANCES OPERATED BY FOSSIL FUELS, SEE TABLE 16a.

TABLE 16a MONTHLY FOSSIL FUEL CONSUMPTION: APPLIANCES AND EQUIPMENT

Appliance/ Equipment	Gross Square Feet of Living Space									
	Under 301	301- 500	501- 700	701- 1,100	1,101- 1,300	1,301- 1,500	1,501- 1,900	1,901- 2,100	2,101- 2,500	Over 2,500
Hot water heater										
Natural gas MCF	.55	.55	1.05	1.05	1.58	1.58	2.05	2.05	2.56	3.01
Propane Gallons	5.61	5.61	10.71	10.71	16.12	16.12	20.91	20.91	26.11	30.70
Fuel oil Gallons	3.87	3.87	7.39	7.39	11.12	11.12	14.43	14.43	18.02	21.19
Kitchen Range										
Natural Gas MCF	.19	.21	.21	.21	.36	.36	.36	.36	.36	.36
Propane Gallons	1.94	4.94	2.14	2.14	2.35	2.35	2.65	2.65	2.86	3.06
Fuel oil Gallons	1.34	1.34	1.48	1.49	1.62	1.62	1.83	1.83	1.97	2.11
Refrigerator 1/										
Natural Gas MCF	.19	.21	.21	.21	.36	.36	.36	.36	.36	.36
Propane Gallons	1.94	2.14	2.14	2.14	3.67	3.67	3.67	3.67	3.67	3.67
Clothes dryer										
Natural Gas MCF	.06	.06	.11	.11	.15	.15	.15	.15	.17	.21
Propane Gallons	.61	.61	1.12	1.12	1.53	1.53	1.53	1.53	1.73	2.14
Freezer 1/										
Natural Gas MCF	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
Propane Gallons	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.06
Space heater (portable) 1/										
Natural Gas MCF	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55
Propane Gallons	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61
Fuel oil Gallons	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87

1/ If more than one of these appliances are present in a quarters unit, multiply the consumption times the number of appliances to determine the total consumed for each appliance category.

NOTE: To compute the cost per month for an appliance that is fueled by a fossil fuel, multiply the consumption listed by the unit cost found in Table 17 of this report.

G. WATER AND SEWER CONSUMPTION/COST CALCULATIONS

In accordance with OMB Circular No. A-45 and Departmental policies and guidelines, when utilities are furnished by the Government, charges shall be based upon regional average residential rates and consumption levels applicable to private rental housing in the survey region.

Where regional survey procedures are used to establish base rental rates, *the charges for Government-furnished water and sewer services, must be based upon regional average water and sewer rates, and not the rates prevailing in the nearest Established Community.* In determining the regional average rates, the water and sewer rates for each survey community were obtained and averaged.

Thus, where the water service is unmetered, and where the Government furnishes water and sewer services, *including well water and septic waste disposal systems*, the regional average flat rate charges, shown below, shall be used. These charges are based upon (1) the average of the monthly service costs (including taxes, service charges, etc.) in all surveyed communities; and (2) consumption levels (based on numbers of bedrooms) contained in planning guides published by the Department of Housing and Urban Development (HUD). The rates below are based upon the number of bedrooms contained in a dwelling.

Flat Rate Water and Sewer Charges

<u>Number of Bedrooms</u>	<u>Monthly Charges</u>	<u>Total</u>
1 (or less)	\$15.00 water + \$13.80 sewer	= \$28.80
2	\$17.50 water + \$14.50 sewer	= \$32.00
3	\$21.00 water + \$15.75 sewer	= \$36.75
4	\$25.00 water + \$16.00 sewer	= \$41.00

H. GOVERNMENT PROVIDED METERED UTILITIES

Where the Government provides the utilities, and the consumption is metered *at the quarters unit level*, the following unit charges will apply.

TABLE 17 UTILITY CHARGES (COST PER UNIT)

Do not calculate the total cost of electricity in steps, such as the first 500 KWH costs so much, then the second 500 KWH costs so much, etc.

a. <u>Electricity</u>	KWH Consumed <u>Per Month</u>	<u>Charge Per KWH</u>
	0 - 500	\$.087
	501 - 1,000	\$.079
	1,001 - 1,500	\$.076
	Over - 1,500	\$.075
b. <u>Fuel Oil #2</u>	\$1.16 per gallon.	
c. <u>Propane</u>	\$1.34 per gallon.	
d. <u>Natural Gas</u>	\$7.11 per MCF (1,000 cubic feet).	
e. <u>Water</u>	<u>Water Consumed per Month</u>	<u>Cost Per Gallon</u>
	1 - 3,000 gallons	\$0.0050
	3,001 - 5,000 gallons	\$0.0035
	5,001 - 7,500 gallons	\$0.0028
	Over - 7,500 gallons	\$0.0025
f. <u>Sewer</u>	<u>Sewer Consumed Per Month</u>	<u>Cost Per Gallon</u>
	1 - 3,000 gallons	\$0.0046
	3,001 - 5,000 gallons	\$0.0029
	5,001 - 7,500 gallons	\$0.0021
	Over - 7,500 gallons	\$0.0016

I. GARBAGE/TRASH REMOVAL SERVICE RATES

In the case of garbage and trash hauling, as with other Government-provided services, OMB Circular No. A-45 requires the charges to be based upon the domestic rates for comparable services provided to occupants of private rental units in the survey area.

The garbage and trash services provided to quarters occupants vary from weekly to daily service. Establishment of a service charge based upon the service in the nearest established community may or may not reflect a similar level of service. Therefore, the charge for garbage and trash collection, when conducted by the Government, will, regardless of quarters type, be **\$11.55 per quarters unit per month**.

J. CHARGES FOR APPLIANCES AND RELATED SERVICES

OMB Circular No. A-45 requires agencies to charge occupants of Government quarters for appliances, furnishings and services which the Government provides with the quarters. The charges for appliances, furnishings and services most typically provided by Federal agencies are found in Table 18. The monthly recapture cost of the items in Table 18 were determined from information gathered by contractors in the survey communities of all QMIS regions, and from special studies conducted by the QMIS Program Office.

Agencies providing appliances, furnishings or services that are not included in Table 18 are responsible for establishing an appropriate monthly charge which reflects the private market value of the item(s) provided. In such cases, the agency or bureau should advise the QMIS Program Office to ensure that subsequent regional survey reports include charges for all Government-provided appliances, furnishings and services.

TABLE 18 MONTHLY CHARGES FOR APPLIANCES & RELATED SERVICES

APPLIANCES		SERVICES AND FURNISHINGS	
Range (Gas / Electric) *	(+/-) \$3.65	Storage Shed (Per Unit)	\$2.60
Refrigerator *	(+/-) \$3.35	Furniture (Per Room)	11.80
Clothes Washer	3.85	Swimming Pool	
Clothes Dryer	3.25	Private Pool	60.00
Dishwasher	3.20	Community Pool	20.00
Microwave Oven	1.50	Satellite Dish	16.10
Trash Compactor	3.65	Cable Television	20.90
Freezer	1.95	Premium Channel (Each)	14.05
Freezer (Community)	1.00	Maid Service	62.70
Window Air Conditioner		Lawn care (Per Mowing)	
Refrigerated Unit	4.15	Houses (Excluding Plexes)	18.20
Evaporative (Swamp) Unit	3.10	All Other Classes	9.10
Free Standing Stove	3.70	Snow Removal (Per Removal)	11.35
Fireplace Insert	4.45	Firewood (Per Cord)	117.30
Lawn Mower	3.90		
Hot Tub	33.60	ELECTRIC CREDITS	
		Well pump (0-1 Bedroom)	1.00
		Well pump (2 Bedrooms)	1.60
		Well pump (3 Bedrooms)	2.35
		Well pump (4+ Bedrooms)	3.15
Community Laundry (Non-Coin) Operated)			
Washer Only	1.95		
Dryer Only	1.60		
Washer and Dryer	3.55	Sewer Lift Pump (0-1 Bedroom)	1.00
		Sewer Lift Pump (2 Bedrooms)	1.00
		Sewer Lift Pump (3 Bedrooms)	1.20
		Sewer Lift Pump (4+ Bedrooms)	1.60
ISOLATION ADJUSTMENT FACTOR	2.48	Base Radio	1.00
		Remote Control Relay	1.00
		Sump Pump	1.00
		Radon Mitigation Fan	9.30

* If the Government provides one range and refrigerator, no additions or deductions are made.

If the Government does not provide a range or a refrigerator, deduct the amount shown above.

If the Government provides 2 or more ranges or refrigerators, add the amounts shown above for each appliance furnished in excess of one range and one refrigerator.

VII. ADMINISTRATIVE ADJUSTMENTS.

Once the MBRR is established, certain adjustments (e.g. for isolation and amenity deficiencies) are authorized by OMB Circular No. A-45. These administrative adjustments are established by OMB and are not derived from regional surveys conducted by the QMIS Program Office.

The administrative adjustments contained in OMB Circular A-45, and described below, are not authorized for dormitories, bunk houses, or transient quarters. This is because the rental rates for those housing classes are administratively established, through extensions of the principle of comparability, and are not based directly upon market comparability.

A. SITE AMENITY ADJUSTMENTS

Living conditions at some Government housing sites are not always the same as those found in the survey communities. In the communities surveyed, the amenities discussed below (and in OMB Circular A-45) are generally present and their contributory value is included in the contract rent and in the quarters MBRR's determined from the tables in this report. Thus, if any amenity listed below is present at the quarters site, no positive adjustment is made for that amenity because its presence has already accounted for in the MBRR. However, the lack of an amenity discussed below represents a less desirable condition that should be reflected as a **negative** percentage adjustment to the quarters MBRR or CPI-adjusted MBRR (CPI-MBRR), whichever is applicable.

1. **Reliability and adequacy of water supply.** The water delivery system at the quarters site should provide potable water (free of significant discoloration or odor) at adequate pressure at usual outlets. If the water delivery system at the quarters site does not meet these conditions, 3 percent should be deducted from the MBRR or CPI-MBRR, whichever is applicable.

2. **Reliability and adequacy of electric service.** Electric service at the quarters site must equal or exceed a 100-ampere power system, and should provide 24-hour service under **normal** conditions. When evaluating the electric service, housing managers are reminded that OMB Circular A-45 recognizes that occasional temporary power outages are considered to be "**normal**" conditions. Furthermore, if an adequate back-up generator is available, then the electric service amenity will be considered to be reliable and adequate regardless of the reliability of the primary power source. When electric service is inadequate and unreliable, 3 percent should be deducted from the MBRR or CPI-MBRR whichever is applicable.

3. **Reliability and adequacy of fuel for heating, cooling and cooking.** There should be sufficient fuel storage capacity to meet prevailing weather conditions and needs. Where electricity is used as the heating, cooling or cooking "fuel," an adjustment can only be made when a deduction has been made for deficient electric service (see paragraph VII.A.2, above). If the fuel delivery/storage system is inadequate, 3 percent should be deducted from the MBRR or the CPI-MBRR, whichever is applicable.

4. **Reliability and adequacy of police protection.** Law enforcement personnel, including Government employees with law enforcement authority, should be available on a 24-hour basis. OMB Circular A-45 defines "**availability**" as the ability of law enforcement officers to respond to emergencies at the quarters site as quickly as a law enforcement officer in the nearest established community could respond to an emergency in the nearest established community.

OMB Circular A-45 further provides that where part-time officers serve the quarters site, the fact that the officers are part-time does not necessarily mean that they are less available than officers in the nearest established community. The important point is that the availability determination must be based on comparative response times (quarters site vs. the nearest established community) - not the employment conditions of the officers serving the quarters site.

Finally, OMB Circular A-45 provides that gaps in availability due to temporary illness or injury, use of annual leave, temporary duties, training, or other short absences, do not render law enforcement personnel "unavailable" at the quarters site.

If, after applying these guidelines, it is determined that the law enforcement protection at the quarters site is unreliable and inadequate in comparison to the reliability and adequacy of law enforcement protection in the nearest established community, 3 percent should be deducted from the MBRR or CPI-MBRR, whichever is applicable.

5. Fire insurance availability or reliability and adequacy of fire protection. Fire insurance should be available (for the quarters) with the premium charge based upon a rating equal to the rating available to comparable housing located in the nearest established community. Alternatively, adequate equipment, an adequate supply of water (or fire retardant chemical), and trained personnel should be available on a 24-hour basis to meet foreseeable emergencies. OMB Circular A-45 provides that **if either element is present (adequate insurance or an adequate fire fighting capability), no adjustment is authorized.** If both elements are missing, 3 percent should be deducted from the MBRR or CPI-MBRR, whichever is applicable.

6. Reliability and adequacy of sanitation service. An adequately functioning sewage disposal system and a solid waste disposal system should be available. OMB Circular A-45 considers septic, cesspool or other systems adequate even though they may require periodic maintenance, as long as they are usable during periods of occupancy. If the sanitation service at the quarters site is unreliable or inadequate, 3 percent should be deducted from the MBRR or CPI-MBRR, whichever is applicable.

7. Reliability and adequacy of telephone service. Access to commercial telephone facilities should be available on a 24-hour basis. Deductions (except as provided below) are not allowed for occasional temporary interruptions of telephone service. OMB Circular A-45 allows specific deductions for various levels of service and privacy. These are explained below.

a. The MBRR or CPI-MBRR (whichever is applicable) should be reduced by 3 percent if telephone service is not available within the quarters or within 100 yards of the quarters.

b. The MBRR or CPI-MBRR (whichever is applicable) should be reduced by 2 percent if there is no telephone service within the quarters, but telephone service (either private or party line) is available within 100 yards of the quarters.

c. The MBRR or CPI-MBRR (whichever is applicable) should be reduced by 1 percent if telephone service is available in the employee's quarters, but the service is not private line service and/or the service is not accessible on a 24-hour per day basis.

8. **Noise and odors.** If there are frequent disturbing or offensive noises and/or odors at the quarters site, 3 percent should be deducted from the MBRR or CPI-MBRR, whichever is applicable.

9. **Miscellaneous improvements.** One or more of the following improvements should be available at the quarters site: paved roads/streets, sidewalks or street lights. If any one of these improvements is present, no deduction is authorized. If all three of these improvements are missing (i.e., there are no paved roads/streets **and** there are no sidewalks, **and** there are no street lights), 1 percent should be deducted from the MBRR or CPI-MBRR, whichever is applicable.

B. ISOLATION ADJUSTMENT

In some cases, Government quarters are located far from the nearest established community (see paragraph IX.C for the OMB's definition of "established community"). In addition, different modes of transportation (travel categories) may serve to further isolate the quarters from the nearest established community. In situations where the quarters location and the travel categories meet the requirements contained in OMB Circular A-45, an isolation adjustment should be applied. To determine whether an isolation adjustment applies, and the amount of the adjustment (if one does apply), you should follow the steps in the Isolation Adjustment Computation Schedule, shown on the following page. This schedule is a (modified) reproduction of the appendix to OMB Circular A-45, and is included in this report for illustrative purposes, only. Therefore, you should use the form prescribed by your agency or bureau when documenting the isolation adjustment.

Isolation Adjustment Computation

- *Step 1.* Determine the one-way distance in miles (from the quarters to the nearest established community) for each category of transportation listed in Figure 1. Enter mileage(s) in the appropriated block(s) under Column B.
- *Step 2.* Multiply mileage figures entered in Column B by point values listed in Column A for each affected category of transportation to produce one-way points for each category. Add 29 points to the category 4 subtotal and 27 points to the category 5 subtotal to reflect relative differences in cost or time by use of these modes of travel.
- *Step 3.* Add all categories of one-way points in Column C to produce one-way points. (The total must exceed 30 points or there is no adjustment for isolation.)

Figure 1

<u>Category of Travel</u>	<u>Column A Point Value</u>		<u>Column B One-way Miles</u>		<u>Column C One-way Points</u>
(1) Paved road or rail	1.0	X	___	=	___
(2) Unpaved but improved road	1.5	X	___	=	___
(3) Unimproved road	2.0	X	___	=	___
(4) Water, snowmobile, pack animal, foot or other special purpose conveyance	2.5	X	___	=	___+29
(5) Air	4.0	X	___	=	___+27
				=	___
TOTAL ONE-WAY POINTS					

- *Step 4.* Calculate the Isolation Adjustment Factor (IAF) using the following formula: Multiply 2 (to reflect round-trip points) by 4 (to reflect number of trips per month) and then multiply by \$x.xx (GSA's current automobile allowance). For example, the GSA mileage allowance, as of the date of this report, is \$0.31 per mile, resulting in a IAF of 2.48.

ISOLATION ADJUSTMENT FACTOR = 2.48

- *Step 5.* Multiply total adjusted points by the Isolation Adjustment Factor to produce the monthly adjustment for isolation (rounded to the nearest whole dollar).

MONTHLY ADJUSTMENT = ___

C. LOSS OF PRIVACY

Some quarters occupants are subject to a loss of privacy during non-duty hours by virtue of **public visits which occur several times daily**. In other cases, quarters occupants may be **inhibited from enjoying the full range of activities normally associated with living in private rental housing** (such as where restrictions are imposed on activities in quarters at national cemeteries, or where quarters are in view of prison inmates). In such cases, OMB Circular A-45 allows a deduction from the MBRR or CPI-MBRR (whichever is applicable) of up to 10 percent. OMB Circular A-45 instructs housing managers to establish proportional adjustments to reflect situations of less frequency or seriousness in their impact upon privacy or usage, or to reflect seasonal variations.

D. EXCESSIVE OR INADEQUATE SIZE

Quarters occupants are sometimes provided dwellings that are excessively large or small for their needs. This may be because the range and variety of quarters available at an installation may be much less than that which is available in private rental markets. In such cases, OMB Circular A-45 allows a deduction from the MBRR or the CPI-MBRR (whichever is applicable) of up to 10 percent. The Circular instructs that the deduction should be in direct proportion to the degree of excess or inadequacy, and that the deduction must not continue beyond one month after suitable quarters are made available. Before this adjustment is applied, local housing managers should consult with managers within their agencies or bureaus to determine whether other alternatives (such as closing off rooms and other excess space) would offer a more suitable means of adjustment.

E. LIMITATIONS TO ADMINISTRATIVE ADJUSTMENTS

Administrative adjustments cannot be applied without limit. OMB Circular A-45 provides that the MBRR or CPI-MBRR cannot be reduced by more than 50 percent unless an isolation is authorized and applied. For quarters which receive an isolation adjustment, the MBRR or CPI-MBRR may not be reduced by more than 60 percent. These limitations do not apply to excessive heating or cooling adjustments, which are described in paragraph IX.A of this report.

VIII. CONSUMER PRICE INDEX ADJUSTMENTS

OMB Circular A-45 requires annual verification, and adjustment (when necessary) of the following rental components that are presented in this report: (1) the Monthly Base Rental Rates (MBRR's); (2) the charges for related facilities (utilities, appliances, furnishings and services); and (3) the Isolation Adjustment Factor (IAF). These verifications and adjustments are to be made, essentially, in each interim year between baseline regional surveys.

Generally, OMB Circular A-45 specifies that these changes are to be based upon September index levels of specified components of the Consumer Price Index (CPI); and the GSA temporary duty mileage allowance in effect as of September 30, of each year. These changes must be implemented at the beginning of the first pay period in March of each following year.

The QMIS Program Office is responsible for determining the amounts of these changes, and for providing QMIS Program participants with the information, the software and the instructions needed to implement the required changes. This information is usually distributed to each National Quarters Officer in November of each year. National, regional or installation quarters managers (as required by your agency or bureau) are responsible for implementing these annual rental adjustments.

IX. OTHER OMB CIRCULAR A-45 RENT CONSIDERATIONS

A. EXCESSIVE HEATING OR COOLING COSTS

OMB Circular A-45 authorizes a deduction from the Monthly Base Rental Rate (MBRR) or the Consumer Price Index - adjusted Monthly Base Rental Rate (CPI-MBRR), whichever is applicable, when quarters are unusually costly to heat or cool. This adjustment is allowed only when (1) the excessive heating or cooling costs are due to the poor design of the quarters or the lack of adequate insulation/weather-proofing; and (2) when the energy/fuel used for heating and/or cooling is metered. This adjustment will vary from quarters-to-quarters, but is the difference between the actual heating and/or cooling costs paid by the quarters occupant and 125 percent of the cost of heating and/or cooling a comparable (but adequately constructed and insulated) dwelling located in the same climate zone. For more information on this adjustment, you should consult your agency or bureau policies.

B. INCREMENTAL ADJUSTMENTS

New baseline regional surveys or annual CPI adjustments may occasionally increase quarters rents by more than 25 percent. When this occurs, OMB Circular A-45 allows housing managers to impose the increase incrementally over a period of not more than one year. The Circular also requires that such increases must be applied in equal increments on at least a quarterly basis.

C. ESTABLISHED COMMUNITY

OMB Circular A-45 has established the following minimum standards for use in determining which population centers (cities, towns, etc.) may be used as "established communities" when determining quarters rents.

1. An established community must have a year-round population of 1,500 or more (5,000 or more in Alaska). The population determinations must be based upon the most recently conducted decennial census.
2. An established community must have at least one doctor and one dentist, who are available to all quarters occupants on a non-emergency basis.
3. An established community must have a private rental market with housing available to the general public. This requirement excludes communities on military posts, Indian reservations and other Government installations which may meet the other criteria contained in paragraphs IX.C.1 and 2, above.